

IRAQ WATCHING BRIEFS

Health and Nutrition

July 2003



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The UNICEF logo, which consists of a stylized globe with a mother and child, surrounded by a laurel wreath.

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HEALTH AND NUTRITION

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Executive Summary

The Iraqi health system was developed throughout the 1970s and 1980s according to a highly centralized, hospital based, capital-intensive model of curative care. It required continuous large-scale imports of medicines, medical equipment and even service workers like nurses. It focused mainly on sophisticated hospitals for advanced medical procedures, provided by specialist physicians, rather than population based care through primary care practitioners.

As this system expanded to cover the majority of the population, it produced notable results. The health system was fully subsidized and free health care was provided to all Iraqis. As the public health system provided free services of high quality and also paid high salary levels, the private health sector in Iraq declined. The rate of mortality among young children was already falling when deaths in the Iran-Iraq war (1980-1988) led the Government of Iraq (GoI) to push for policies to stimulate population growth. As part of this policy, a child survival campaign was initiated from the mid 1980s. This included setting up a network of rural and urban primary health facilities, and immunization and breastfeeding campaigns. The programme was associated with a steep decline in mortality among young children in the late 1980s. Medical care reportedly reached 97% of the urban population and 71% of the rural population. Nonetheless, most resources invested into the health care system continued to focus on hospital based curative care.

Rising economic standards, a subsidized health system and targeted population programmes, led to reduced morbidity and mortality amongst Iraqi children. Infant mortality rates fell from 80 per 1,000 live births in 1974, to 60 in 1982 and 40 in 1989. A similar trend characterized under 5 mortality rates, falling from 120 per 1,000 live births in 1974, to around 60 in 1989. The situation changed dramatically from 1990 onwards due to the Gulf War and the impact of economic sanctions. Shortages of food and medicine limited the access to essential goods for the majority of the population immediately after the war. The food rations provided by the GoI met only part of the population's food needs. Many hospitals and health centres were damaged, expatriate medical personnel (especially nurses) left the country, and financial resources for the health sector declined precipitously. In the 8 months following the 1991 war, mortality rates among children under 5 years of age rose from around 50 per 1,000 live births to 120.

The crisis brought out the inherent weakness in a health system based on a capital-intensive model of care. First, the absence of systematic outreach, combined with damages to hospitals and other facilities, immediately reduced the access of the population to any kind of medical services. Second, most foreign personnel left the country. This was especially problematic for nursing, and showed the weakness of not building an indigenous cadre of allied health personnel within the country. Third, as the supply of electricity become erratic, most health facilities could not function effectively, showing the interlinked nature of the social sectors on the one hand and, the excessive dependence of the health system on sophisticated medical equipment on the other. Finally, with the food and water crisis, the epidemiological profile of the population underwent a change. Deaths due to diarrhoea rose fivefold and malnutrition-related diseases such as respiratory infections became widespread. The health system did not adapt adequately to the changed disease profile. There were few public health specialists. Nutritional issues, through specifically targeted programmes, had not previously been necessary due to the formerly generally high-level economic well being of the population.

The health sector and the status of health and nutrition among the population continued to deteriorate over the next six years. Mortality rates continued to range between 90 and 100 for infants and 110 to 120 for children under five. This was the situation in 1996, when the Oil for Food Programme (OFFP) was initiated. Health sector imports had fallen from US\$ 500 million in 1989 to US\$ 50 million in 1991. Spending per capita fell from a minimum of US\$ 86 to US\$ 17 in 1996. The capacity of the curative health system was, by then, greatly reduced but also failed to reorient itself to the changing health needs of the population. The child survival campaign, first initiated in the 1980s, was not reactivated.

Maternal mortality (MM) is high in countries with both poor living conditions and inefficient health services. A demographic survey calculated MM to be 294 per 100,000 women aged 15–49 during 1989–1998. This represents a more than doubling of the rate of 117 per 100,000 estimated in 1989. Most maternal deaths occur after delivery (61%) or during pregnancy (24%). Prenatal care or delivery with trained assistance and referral can prevent most such deaths. Some 65% of births occurred outside formal health institutions; 79% of these were attended by traditional birth attendants (TBAs) in 1998. The proportion of women delivering without trained assistance went up during the 1990s, to 30% in urban areas and 40% in rural areas. About 80% of women reportedly received some kind of prenatal care, but only 60% received postnatal care. Since 90% of newborns receive post-natal care, an opportunity to improve coverage care among post-natal women exists. Of those women who delivered in public or private health institutions, many received inadequate care because essential drugs were missing, transport to more advanced institutions was poorly organized, or doctors lacked training in emergency obstetrics. It is mainly referral institutions at the district level that have the capacity to attend complicated births; about half of these lack key resources to provide appropriate care. Women are at increased risk of poor birth outcomes with high rates of anaemia, short birth intervals (41% spaced less than 2 years apart), high total fertility (7.7) and early marriage (40% prior to age 18). Some 15% -20% of deliveries are at high risk and need advanced medical support.

Contraceptive prevalence went up from 14% - 25%, but this still fell below the average demand of 51 % for Arab countries. Only 550 of the country's more than 1,700 public hospitals and health centres are equipped to provide emergency obstetric care. Addressing the primary health care needs of pregnant women, and the secondary care needs of women with complicated deliveries, will greatly improve birth outcomes and reduce maternal mortality.

The OFFP began in 1996 and the first imports started coming in from 1997. Over the next six years, within the thirteen phases of the Oil for Food Programme US\$ 4,749 million was allocated to the health sector (73% of this was for Central/Southern Iraq and 27% for Northern Iraq). Half of this was for medicines and half for medical equipment and other supplies. This provided a value of annual humanitarian imports of nearly two thirds of that imported in 1989.

During the OFFP, investment in important medical goods was not matched by internal investment in salaries, training and recurring expenses. The OFFP thus created an imbalance in the health system making it commodity rich but poor in human resources and service quality. The weakness of the training systems built into the health system, of dependence on foreign personnel for nursing in the 1980s continued throughout the 1990s. The experience of the OFFP has provided an important lesson for the future reconstruction of Iraq, proving that a solely commodity based reconstruction plan, without systems reform and human resource investment, will not have a rapid impact on key human development indicators.

While the general focus within the OFFP continued to be curative health care, certain targeted programmes expanded and met basic needs. While vaccination for childhood diseases as a whole fell dramatically in the early 1990s, but by 1996 the coverage began to improve and by 2000 coverage rates had recovered to pre-1990 levels. Issues of quality continued to plague the health system and even in the vaccination programme there were problems of maintaining vaccine quality through the cold chain. Other issues in public health like maternal mortality and mental health continued to receive little attention compared to curative treatment in hospitals. Mortality rates among under fives in the three North governorates were less than half the rate (60 per 1,000) found in the Centre/South governorates (150 per 1,000) by the year 2000. Similarly, moderate and severe rates of underweight malnutrition were less than half (7%) than in the rest of the country (17%). Also in the North as compared to the Centre/South, iodized salt use was much higher (70% vs. 25%), the percentage of children receiving a dose of Vitamin A was higher (25% vs. 10%), and DPT coverage was higher (80% vs. 60%). Among the health indicators in the MICS 200 household survey, only the rates of diarrhoea in the last two weeks were not lower in the 3 North governorates (average throughout the country of 15% - 20%).

Human resources and professional training in health received little attention in the 1990s. This weakness was a legacy of the past where the mix of health personnel was skewed in favour of specialist medical education rather than allied health or community health personnel. In Central/Southern Iraq in 1999 there were 3,028 specialist physicians; 7,804 generalist physicians; 2,003 dentists (i.e. 10,832 qualified doctors); 2,044 pharmacists; 10,780 nurses; 1,389 dressers; and 19,507 other staff. Data for 2002 showed that while there were 53 doctors per 100,000 of the population, there were only 44 nursing staff per 100,000. The number of doctors was slightly low compared to the regional average, but the nursing staff was woefully low. Eighty percent of this nursing cadre were either high school graduates or graduates of post high school nursing institutes. A much larger group of nurses will be needed to rebuild the health system towards primary care.

Public health does not exist as a field in Iraqi medical schools. There are only three university levels nursing schools and no licensing procedure for nurses. Medical and nursing schools have not reviewed their curricula since 1990 and curricula content is determined centrally by the Ministry of Health (MoH) rather than individual schools. Teaching quality has been deteriorating. A major reform of the health education system, with a reorientation towards public health, is therefore essential and needs to be a part of/inherent to the health sector reform process.

The public medical system in Iraq before the war included 282 hospitals; 1,570 primary health care centres; 146 warehouses; 14 research centres and 10 drug production plants. Few institutions have facilities and staff to provide triage, trauma and emergency medical care. The MoH maintains Blood banking facilities solely within central urban facilities. The military medical system had 31 hospitals with 11,000 staff that can be converted to public health facilities. Most local pharmaceutical production facilities closed down following 1990. In 1999, the Two Year Assessment and Review Exercise of the Security Council Resolution (SCR) 986 operation estimated that the reconstruction of the health care system required investments of US\$ 2-3 billion.

The mix of public and private services in Iraq is complicated. Prior to 1990 it was dominated by the public sector, but since 1994, the GoI facilitated private and semi-private practice. This was done to prevent physicians from leaving the country. A policy of allowing hospitals to charge the cost of a recovery fee was allowed in 1998. The private and semi-public sector in Iraqi health care was strong.

After the 2003 war, health and nutrition status continued to be a major concern. Physical facilities and human resources have depleted from pre-war levels. Adverse malnutrition, child morbidity/mortality and disease prevalence amongst the population can be improved now and major rehabilitation of the health system should begin.

If effective results in public health are to be achieved, the focus of the health system must change to primary health care, patient education, population-based care, and evidence based practice. In the programmes within the sector, it is necessary to design at this stage, vertical, targeted programmes, through an extensive outreach system, that focuses on factors leading to high morbidity and mortality amongst vulnerable groups. These programmes should be integrated gradually. Solutions include the promotion of exclusive breastfeeding; appropriate infant and child feeding; maternal or caregivers counselling; community education on diarrhoeal prevention and treatment at home; early management and treatment of pneumonia; use of Oral Rehydration Solution (ORS); expanded coverage of immunization, especially for measles; Targeted Nutrition Programmes (TNP) around therapeutic feeding; as well as micronutrient supplies of Vitamin A and iron.

The health and nutrition sector generates a good deal of data. Specific assessments needed are:

- **Studies on geographic variations.** Such studies were not permitted in previous years. There is an opportunity to obtain and review population based research for presentation by region and/or governorates (i.e. MICS 1996 for comparison to MICS 2000) to assess disparity among population groups and by governorate.
- **Elaboration of a permanent system of monitoring of population health status,** including assessment of nutritional status, KAP health seeking behaviour studies regarding use of medical care services, young child nutrition, hygiene, and treatment of diarrhoea and ARI. A system of monitoring birth weights should be established. Monitoring should be longitudinal in nature, and cross-sectional surveys should only be carried out as part of an on-going plan for monitoring.
- **Development of information sources on specific population groups,** about whose needs little is known, is necessary. This includes children over age five, adolescents, older adults, internally displaced populations, widows, female-headed households, street children and orphans, those with mental health needs, and those with disabilities.
- **Expanded monitoring of access to micronutrients and human micronutrient status is needed,** especially with regards to Vitamin A, iron, iodine, fluoride, etc.
- **Establishment of a large scale national system for monitoring environmental health status,** including biological, chemical, and nuclear contaminants.

- **Assessment of current status and needs of the chronic disease card system.**
- **Assessment of current status and needs of the local drug and medical item production plants.**
- **Analysis and results of the consolidated health and nutrition assessments databases.**
- **Census of remaining major health-related Oil for Food assets and needs** (vehicles including ambulances, generators and forklifts/handling equipment, etc.).

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1. Introduction

This watching brief focuses on health, health services, and nutrition in Iraq over the last 20 years, and information on the situation since the 2003 war. There have been several waves of investment and policy, *de facto* or stated, over these decades. Reconstruction in Iraq now will benefit from an analysis of these policies and their impact on health and nutrition. The paper summarizes information drawn together as a desk review, including personal observations, interviews with United Nations (UN) and Iraqi government officials, Ministry of Health (MoH) and international organization staff, reviews of UN and Government of Iraq (GoI) databases on survey statistics, selected published and unpublished independent survey research reports, field observations, and post-war rapid assessments. This information is supplemented by key informant interviews and focus group discussions held with health care providers and educators in prior months.

First, the status of Iraq prior to sanctions and the war of 1991 is described. Health and nutrition status, health resources, policy and finance as well as specific programmes are analysed for the period 1990 – 2003. This was done through detailed analysis of the period 1990 – 1996, and then for the period of the Oil for Food Program (OFFP), 1997 – 2003. Summary and analyses are then made of changing conditions and assessments made during the ten weeks of the immediate post-war period of 2003. Recommendations for the short and medium term are made based on the analysis of these periods. Among these recommendations are specifications of data gaps and further information needed for future decision-making.

The availability and access to food at the household level is a key determinant of the health and nutrition status of the Iraqi population. This is particularly important in view of the dependency of a large proportion of the population on the government. The issue of intra-household food distribution, especially the needs of children, women and the elderly are of particular concern. However, the analysis of household food security situation is beyond the scope of the present chapter.

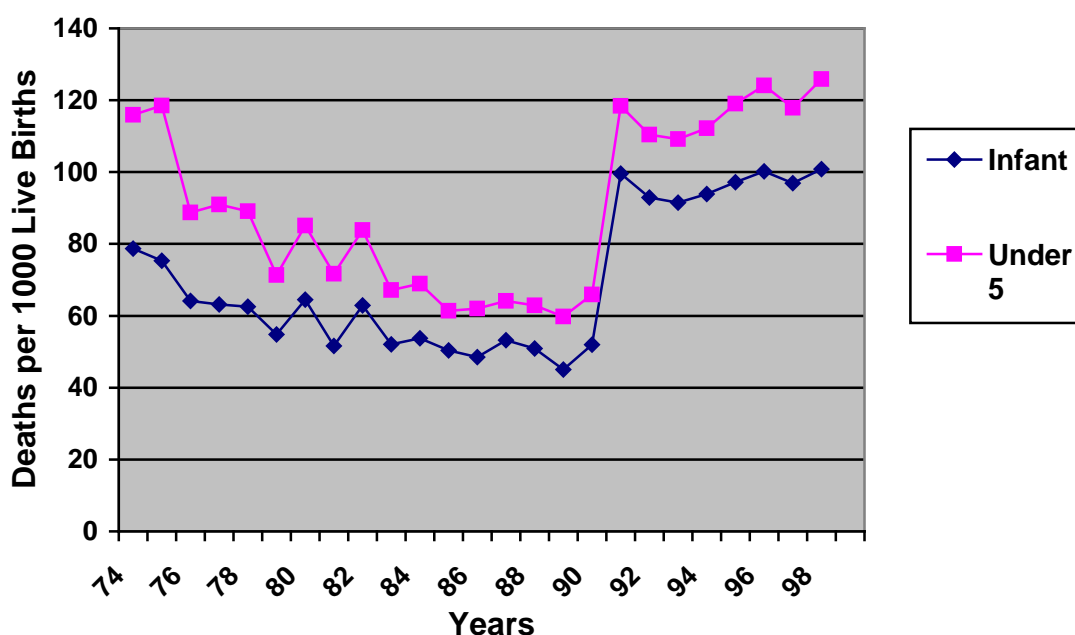
Iraq can be understood to have /undergone three historical periods of development over the last 20 years. It is now embarking on its fourth period. Within very different contexts, each of the previous periods focused heavily on the funding of curative clinical services rather than a focus on investment in human capacity development. Policy in most areas was not well developed and consultation with key stakeholders in Iraqi society seldom occurred. The opportunity now exists to learn from rather than repeat the past. Far more effective investments in human and economic development will result.

2. Health and Nutrition Prior to August 1990

2.1. HEALTH AND NUTRITION STATUS

Iraq is a young country, with 42 % of the population under the age of 15 (WHO, Geneva, 1998). See Annex Table 2. Like many Arab states, it had relatively high levels of young child mortality relative to its level of per capita income during the 1960s and 1970s. The rate of mortality among young children was falling when deaths in the Iraq-Iran war (1980-1988) led GoI to stimulate population growth. See Figure 1.

Figure 1: Mortality Rates Among Young Children, All of Iraq, 1974 – 1998



Source: (67)

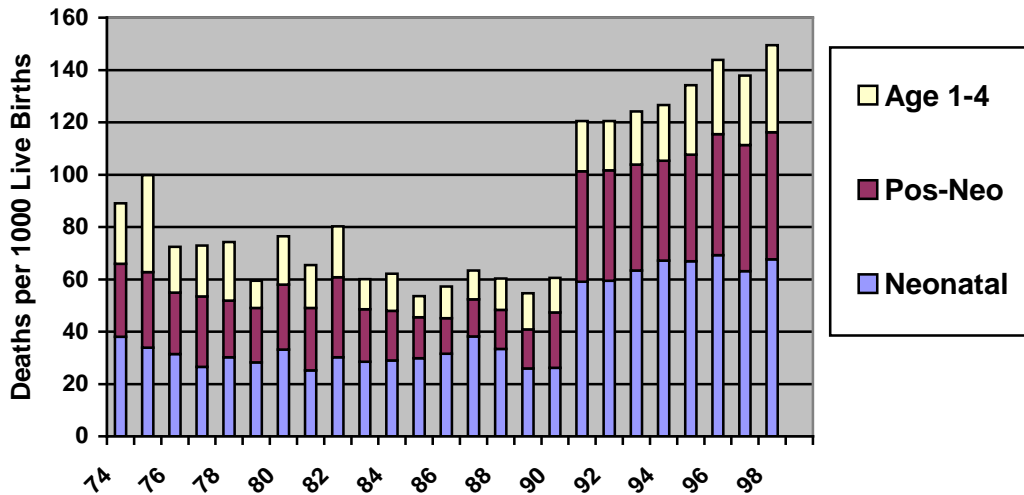
Information on mortality at this time is of high quality due to several research efforts. The Gulf Council of Health Ministers surveyed each of the seven countries in the Gulf region. The Gulf Child Health Survey (GCHS) conducted in Iraq in March/April of 1989 was the last survey carried out in this series. During May 1990 UNICEF collaborated with the Ministry of Health and Ministry of Planning to conduct the Iraq Immunization, Maternal and Childhood Mortality Survey (EPI/CDD). In 1977 the Iraqi government estimated its infant mortality rate (IMR) at 61 per thousand.

The accelerated decline of mortality in the 1980s was dramatic, especially in light of the Iran-Iraq war. That war resulted in a major diversion of economic resources to the conflict. However, little fighting occurred in the interior of the country and health services were not much affected. Despite limitations on social investments during these years, education levels of the population improved, access to doctors and hospitals improved, the population continued to become more urban, clean water became more accessible, food prices remained stable, and immunization coverage improved. Thus, both improving conditions of life and targeted child mortality reduction programmes accelerated the decline of mortality among young children. This experience bore lessons for the future, as at present targeted programs became weak and the quality of life deteriorated.

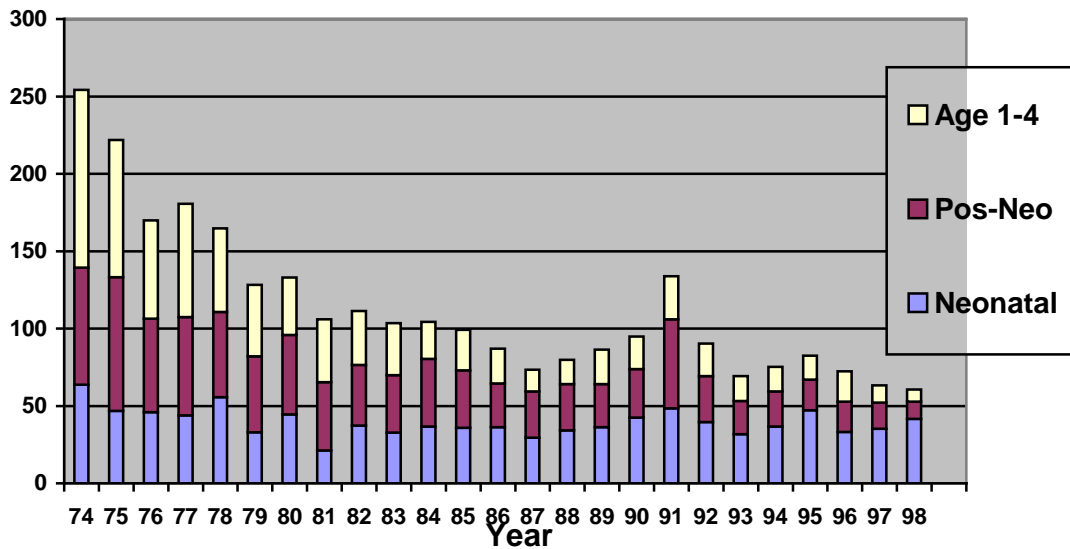
Mortality decline was greatest among post-neonates, where targeted child survival programs had the most impact. This was confirmed by data from the 1999 Morbidity and Mortality Survey. See Figures 2 and 3. No reliable data on changes in mortality among groups above age five exist.

**Figures 2 and 3: Mortality Rates Among Under Five Year Olds, Iraq, 1974 – 1998,
By Geographic Area and Age Group**

Centre/South



North



Source: (67)

While large-scale, representative demographic surveys were carried out in the 1980s, no similar baseline information exists on nutrition. Studies in Baghdad demonstrated 3-4% of under 5-year-olds to be more than two standard deviations below the mean reference population's weight. This indicates that chronic and acute malnutrition rates were modest and similar to those of a well-nourished population. Only five health centres were involved in these studies; rates of underweight were very low at four centres and 18% at the fifth. A study in Basra in 1983-1984 found that 5% of infants were underweight. The rates for Baghdad were similar to that of the reference population, indicating a low level of malnutrition in the capital city. Malnutrition was likely to be more common in outlying governorates, poor parts of the city,

and rural areas. The Iraqi Ministry of Health reported that from January 1989 through August 1990 approximately 1% of hospital admissions were due to malnutrition.

The percentage of children born weighing less than 2.5 kg was reported to be 5% in 1984 and 9% from 1982 through 1988. The Ministry of Health reported in 1990 that of the approximately 60% of all births occurring in public hospitals, 4.5% were under 2.5 kg. This low rate was comparable to that in developed countries and was much lower than the average rate of 14% in Arab countries. In sum, Iraqi living, nutrition, and health standards in 1990 were relatively high.

Maternal mortality in 1989 was estimated to be 117 per 100,000 live births. Reliable information on maternal health is available mainly for the period after 1996, examined later in this document.

2.2. FACILITIES, PERSONNEL, AND ADMINISTRATION

Most health workers were public employees and provided care without user fees to Iraqis and any other visiting Arabs. The state offered generous employment benefits, but there was little consultation with community members, labour groups, or private industry. Indeed, the highly centralized state nationalized many industries and discouraged non-state actors, including tribal and religious leaders, rival political parties, and the private sector. Limited expertise in health planning existed, as the state focused heavily on training clinical specialists and was virtually without staff trained in health administration or public health. The country had no food and nutrition policy, and management expertise for monitoring, supervision, or assessment of the quality of care was limited.

Policy in this period can mainly be identified by the service system that was developed. The heavy emphasis on clinical medical specialties, modelled on systems in the UK and US, led to a focus on the construction and equipment of sophisticated hospitals rather than community based care and mid-level health workers.

The directorate of public health was formed in 1921. It was later subsumed as part of the Ministry of the Interior, and formed anew as a Ministry of Health in 1952. Its major legislative acts were signing the Alma Ata declaration on Primary Health Care in 1978 and using this as part of the basis for the Public Health Laws in 1981 and 1989.

The Ministry of Health (MoH) was the authority for construction, staffing, and equipping public facilities. MoH had national level central offices, with six Directorates (See Annex Table 9):

- Preventive Medicine
- Environmental Protection
- Planning
- Administrative and Legal Affairs
- Pharmaceutical and medical Appliances
- Technical Affairs
- Public Clinics

The Directorate of Preventive Medicine ran programs for mother and childcare, school health,

non-communicable diseases, and immunizations. See Annex Table 10. It included the following offices:

- Primary Health Services
- Tuberculosis Control Institute
- Nutrition Research Institute
- Communicable Disease Control Centre
- Public Health Laboratory
- Sanitary/Health Inspections

The Ministry of Health was composed of 17 governorate offices (also called Directorates of Health-DOH) and four similar offices for areas of Baghdad. The geographic offices direct a total of 86 local Health Sector MoH offices. Sparsely populated governorates had only one Health Sector, while the city of Baghdad had 9. Each governorate was equipped with secondary level hospitals. Advanced procedures like dialysis, transplant surgery, and in-vitro fertilization were provided in specialized hospitals in a few major cities. Most private hospitals shut down due to the superior services and skills available without user fees at major public hospitals.

The Communicable Disease Control Centre maintained a system for weekly reporting of obligatory notification diseases in each governorate. Hospitals and health centres provided weekly and monthly reports on the number of patient's visits and activities undertaken.

In the 1990s the GoI claimed to have invested heavily in health during the 1970s and 1980s. Large scale funding from a newly nationalized petroleum industry was available through highly centralized socialist state structures to institute developmental projects in this rapidly urbanizing country. However, the state was already secretive about budgets, and no detail is available to examine these claims. Thirteen hospitals are known to have been built during the 1980s with support from Japan; this represents only a fraction of the more than 150 public hospitals in the country. Many physicians and medical educators were sent overseas for training and they serve as the bulk of medical leaders today. Priority activities expanded rapidly through centralized planning. Where capacity was limited, guest workers were employed in large numbers. In health, these were mainly physicians in some specialties and most of the nurses in the country.

The fully envisioned system of hospitals was never completed. Suleimaniyah, for example, only started construction on its governorate-level referral hospital in 2002. More than a third of all beds and physicians were located in Baghdad, and close to half of these were located in the complex of five hospitals known as Saddam Medical City. The cities of Basrah and Mosul also built on long traditions as referral medical centres with the construction of major new hospitals in the 1980s.

Subsidies were instituted to encourage more childbearing and a child survival campaign was developed in the mid-1980s. This involved 1,000 mobile outreach service teams in rural areas. Campaign priorities included breast-feeding promotion, diarrhoea treatment programs, immunization campaigns, outreach for Tuberculosis (TB) care, and the building of a large network of primary health care centres. Primary health care services were reported to be within reach of 97% of the urban population and 71% of the rural population. With the exception of this one program, the health system concentrated almost all its resources on developing and

maintaining sophisticated hospitals in cities and subsidizing the purchase of pharmaceuticals. Services provided, including the provision of pharmaceuticals, were also without user fees. Health Insurance Clinics (HIC) were built in remote areas for new graduate physicians to work for a year providing social service to populations with poor access. See Annex Table 10. Some 893 of the Health Centres (HC) had a laboratory. There are Public Clinics (PC) in remote areas that are staffed by nurses and visited by physicians periodically and some HC have Chronic Disease Pharmacies (CDP) to provide medication for chronic conditions. There was a network of 2,899 private pharmacies, 490 private clinical laboratories, and private medical facilities in major and minor cities. Specialized pharmacies exist to dispense medicines for rare conditions. There were 9 forensic labs, 5 dental labs, 2 tropical disease centres, 18 emergency care centres, and 21 specialty dental centres. See Annex Table 1.

2.3. POLICY AND FINANCE

Little information is available for the period prior to 1990. The Constitution of Iraq states that health is the right of every citizen. In 1956, Iraq began health insurance programs for employed workers with social security polyclinics and hospitals. Only 2% of hospital beds were reported to be private prior to 1990.

Three hundred and sixty million dollars was reportedly spent on imported medicines and \$100 million on products to produce medicines in 1989. If one assumes that imported materials are a third of all health system costs, as is common in developing countries, then the entire health budget would have approximated US\$ 1.5 billion prior to sanctions and the 1991 war. This represents an annual expense of \$86 per person. Even if the total value was double this estimate, it represents a relatively low level of health spending compared to regional averages.

2.4. NUTRITION-FOCUSED POLICIES AND PROGRAMMES

Domestic production was heavily subsidized and the state imported a growing proportion of all food in the 1980s. Just before the 1991 Gulf War, local production supplied an estimated 30% of the country's foodstuffs. In 1989 Iraq imported more than \$2 billion in foodstuffs. The Iraqi Ministry of Trade (MoT) reportedly supplied 343,000 metric tons of basic grains per month prior to September 1990. Approximately 3,375 calories per capita per day were available up to August 1990. Within the region, only Turkey had higher calorie availability levels. A food safety law was passed in 1982. The MoH employed about 1000 food inspectors. They undertook 32,000 tests in 2002.

A rationing system was initiated in September 1990 after sanctions were imposed. The system provided wheat, rice, cooking oil, and sugar at highly subsidized prices. This ration provided from 900 to 1,300 calories per capita per day during September 1990 through June 1991. See Table 1.

Table 1: Calories per Capita, 1990 – 2002

Pre-90*	1991	1992	1993	1995	1996	1997	1999	2002
3,315	1,300	1,770	1,654	1,093	1,295	2,030	2,150	2,215

Source: (2), (27) and (62)

*Pre-1990 figures stand for total estimated calorie availability. Subsequent figures are ration only. An average 500 additional calories are estimated to have been available off-ration.

3. Sanctions, the Gulf War of 1991 and the Period of Post-War Sanctions

3.1 HEALTH AND NUTRITION STATUS

The constraints on access to essential goods had an immediate impact on mortality among young children. Comparing mortality among under one-year-olds during the pre-war sanctions period of August 1990 – January 1991 to the mortality rate during the same months in the previous year, the rate rose from 36 to 42 deaths per thousand. This represents a 17% rise in infant mortality. Among under five-year-olds, the rate for the pre-war sanctions period (August 1990 – January 1991), compared to the same months of the prior year, rises from 44 to 49 per thousand for under five-year-olds, representing an 11% increase. This rise in mortality went entirely unrecognised at the time but was an important indication of what was to come.

The rise in mortality, while only modest in magnitude compared to later mortality increase, suggests that deterioration associated with sanctions, even without subsequent war-related destruction, had far reaching negative impact on the health of young children. During this 19-week period, electric power, water, and transportation systems throughout Iraq were still intact. Civil war in Kurdish and Shiite areas had not yet begun. The only notable changes identified during this period were the partial withholding of food stocks and medicines in response to sanctions and in anticipation of war. It appears that these relatively minor changes were sufficient to increase the risk of death in the most vulnerable population sectors. Increased risk of death occurred almost entirely among children aged two to fifteen months. There was no excess rate of death after fifteen months of age. Newborns can be largely protected from external threats of death by maternal antibodies and breast-feeding. It is the children of poor or uneducated mothers who are not breast-fed or who are weaned early that face diarrhoea/malnutrition that can lead to death without timely medical intervention. It will subsequently be seen that children in these age groups were particularly vulnerable to high rates of malnutrition and mortality following the 1991 war as well. The percent of hospital admissions for malnutrition rose from about 1% in early 1990 to 2.5% from September 1990 through April 1992.

In August 1991, following the Gulf War, the International Study Team (IST) conducted a community-based cluster sample survey collecting data on live births from January 1991 through August 1991 in 17 of the country's 18 governorates. In the 8-month period following the 1991 war, mortality among children under five years of age rose from around 50/1000 to about 120/1000.

The IST estimated excess mortality rates at 1.8 deaths per thousand during the first month of life, 4.3 deaths per thousand for the second to the eleventh month of life, and 5.2 deaths per thousand for one- to four-year-olds. Babies under one month of age were thus relatively protected, even though mortality is known to be high for newborns. Deaths reportedly due to diarrhoea rose fivefold, and the rate for injury-related deaths rose fourfold. Before the war, 20.7% of all deaths among under five-year-olds were due to diarrhoea; during and after the war, and 38% of deaths were due to diarrhoea. Diarrhoea had already become more common in the pre-war sanctions period; it was further exacerbated in the period of war-induced destruction of electric and water systems throughout Iraq. This was especially true in Kurdish (North) and Shiite (South) areas where uprisings occurred in the immediate post-war period. Mortality among Kurdish children, displaced en masse to areas without sanitary conditions by the

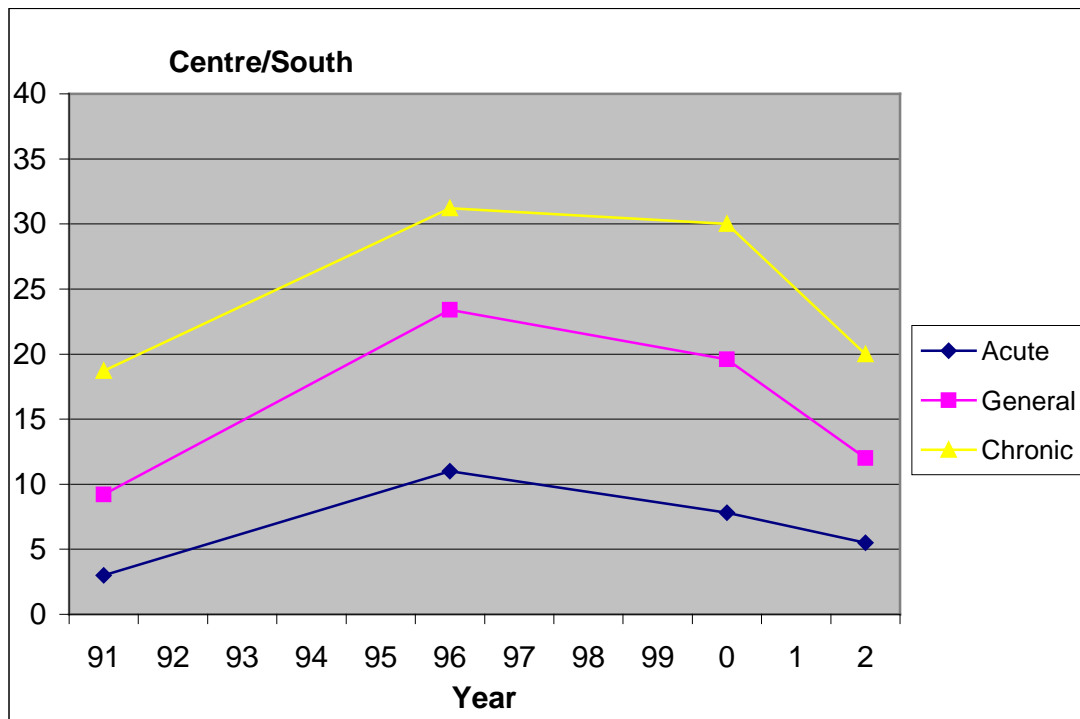
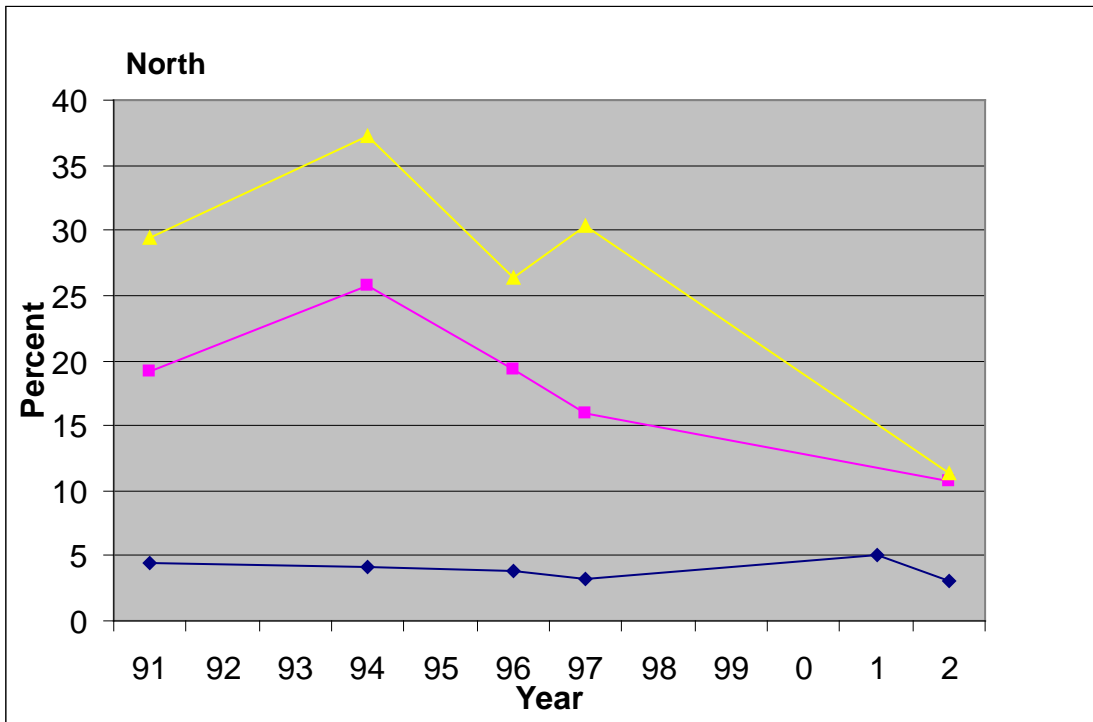
uprising in the north, rose from 3.5 times the pre-war rate in Baghdad to 11 times the rising rate in the capital. A mother's education was always an important predictor of young child survival. Increased dangers to child health in the unsanitary environment further exacerbated the influence of mother's education on child survival. The under five-year-old mortality rate was 2.5 times higher for illiterate mothers compared to literate mothers before the war; and illiterate mothers were at a greater disadvantage after the war, experiencing an under five-year-old mortality rate 3.5 times higher during and after the war. The rise in male infant deaths exceeded females and the rural death rate was about 30% higher than the urban rate.

In 1994, the Iraqi government reported that sanctions caused a greatly increased number of deaths. It provided data showing a rapid rise in mortality among under five-year-olds, up from 592 per month in 1989 to 2,289 per month in 1991, 3,911 per month in 1992, and 4,409 per month in early 1994. These data were derived from hospital-based death reports for all under fives dying from respiratory infections, diarrhoea, gastroenteritis, or malnutrition. For over fifty year olds, the mortality rate was reported to have risen from 1,685 per month in 1989 to 4,872 in 1991, 6,378 in 1992, and 6,731 in 1994. The main recorded causes of death were cardiac disease, hypertension, diabetes, renal disease, liver disease, and malignant neoplasm. In post-war Iraq, however, hospital deaths represented a declining proportion of all (not just sanctions-related) deaths, and thus providing an unreliable indicator of mortality change. UN agencies published reports using these data, without critique or identifying the source, as the basis for an estimate of 4,500 excess deaths per month among under five-year-olds. Subsequently, various UN humanitarian agencies continued to report 4,500 – 6,000 excess embargo-related deaths per month as a verified fact. This provided the basis for estimates.

Total excess deaths among under five-year-olds reached 560,000 in 1995 and 750,000 in 1998, and up to 1,400,000 in 2001. Other researchers used mistaken or exaggerated information to project much larger estimates of excess deaths. More recently, two methodologically rigorous projects have established excess mortality among under fives to total 400,000 – 500,000 for the entire period of sanctions.

The differences in the types of malnutrition in under 5 year olds between 1991 and 1996 shows a marked regional difference between the North and the Centre/South governorates reflecting the varying conditions the population was subjected to. In the Centre/South the percentage of all types of malnutrition peaked in 1996 whereas in the north it peaked in 1994. See Figures 4 and 5.

Figures 4 and 5: Malnutrition Among Under Five year Olds, 1991 – 2002, Centre/South

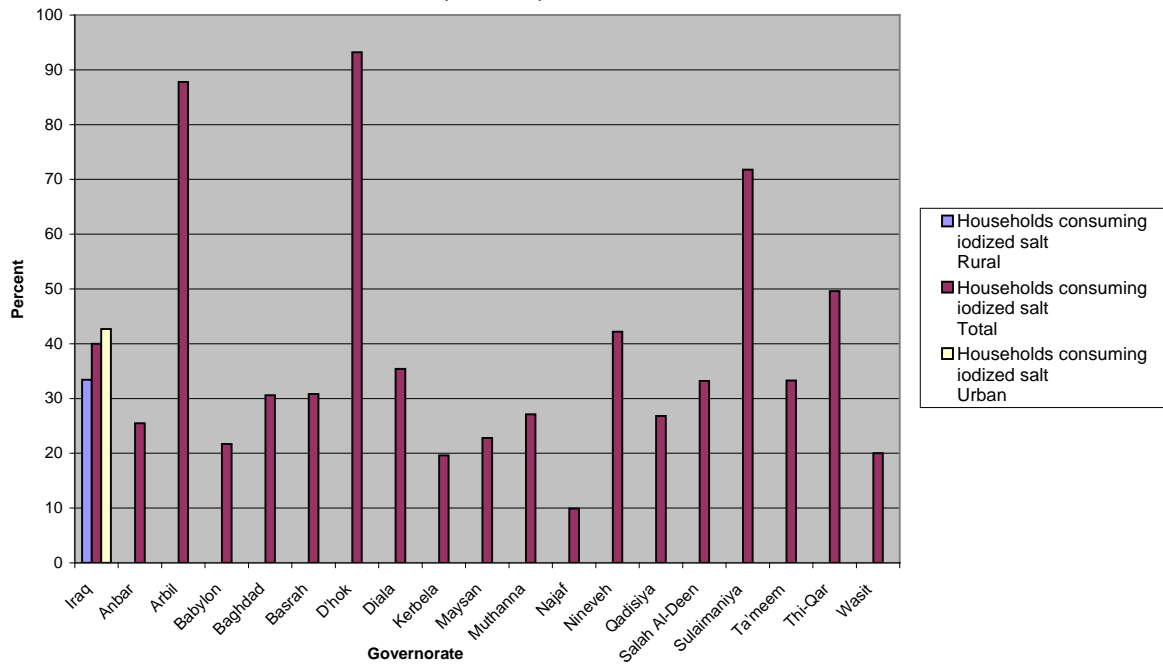


Source: (21), (23), (24), (26), (31), (39), (63) and (71)

Iodine deficiency disorders in school children were estimated at between 8 – 14 % in 1978 and had risen to 44 % by 1993. In 1994, Vitamin A deficiency in under 5 children was estimated at 2.2 % and Bitot’s spots at 1.6 %.

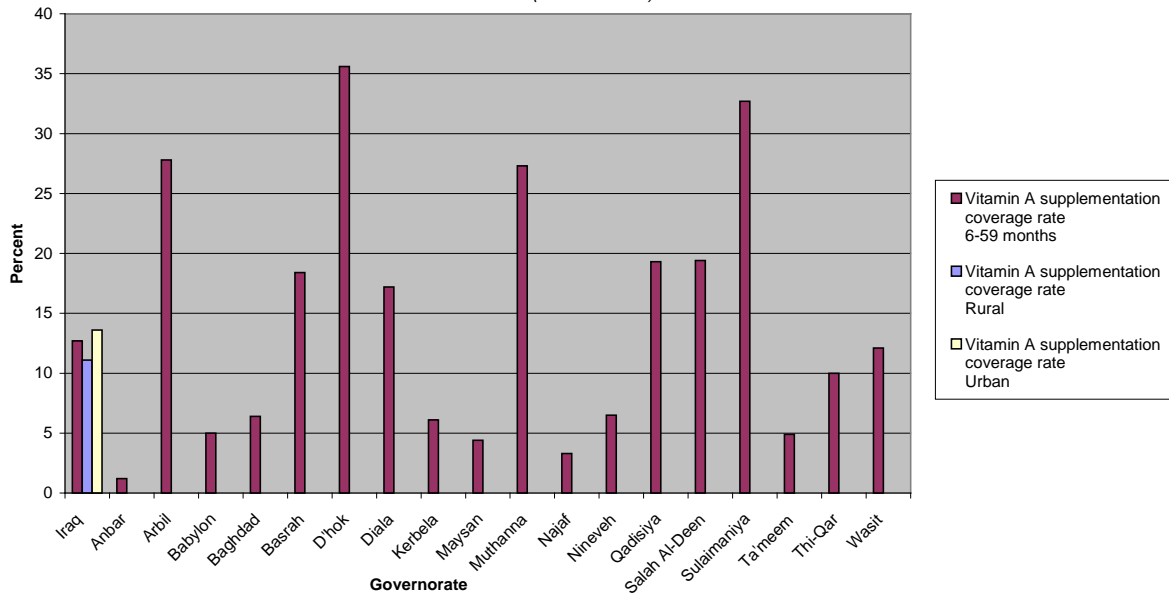
Iodized salt use was much higher in the North (70%) than in the rest of the country (25%). The percentage of children receiving a dose of Vitamin A was higher as well (25 % vs. 10%). See Figure 6 and 7.

Figure 6: Households consuming iodized salt (15+PPM)



Source: Iraq Multiple Indicator Cluster Survey 2000, Central Statistical Organization & UNICEF, Baghdad December 2001

Figure 7: Vitamin A supplementation coverage rate Last 6 months (6-59 months)



Source: Iraq Multiple Indicator Cluster Survey 2000, Central Statistical Organization & UNICEF, Baghdad December 2001

Vaccines

Vaccination coverage for childhood illnesses overall fell dramatically in the early 1990s from higher pre-1991 Gulf War levels. Good data are only available for the period starting in 1998, examined later in this document.

3.2. FACILITIES, PERSONNEL AND ADMINISTRATION

Many hospitals and health centres were damaged in the bombings and civil conflict of the war of 1991. Most foreign workers left Iraq, which left the country with a large cadre of Iraqi physicians but few nurses. Electric and water services were paralysed in most cities for months following the war. Capital shortages and sanctions prevented the importation of new large-scale goods for infrastructure rehabilitation, but duplicate purchasing at the time of project initiation left the country with a remarkable initial ability to rebuild rapidly. Iraq's social infrastructure-including health institutions, schools, and water service-did not receive the same attention. The deficit in these social institutions, although difficult to quantify, greatly exacerbated the effect of the shortage of medicine and food during the early 1990s.

3.3. POLICY AND FINANCE

Iraq's health and social systems, designed on a capital-intensive, centralized model, were poorly suited to Iraq's transformed epidemiological situation in the 1990s. In the 1980s, the health system emphasized curative care provided by medical specialists and foreign nurses. The country had few public health or primary care specialists. Thus, there were few people with the skills to facilitate efficient reorganization or rationing decisions that the health system now needed. Few physicians had ever seen a case of severe malnutrition, and fewer know how to treat one. Even fewer were able to focus on health and nutrition education/promotion to reduce the number of cases that occurred.

In times of deteriorating social conditions, health services can serve as a "safety net" to reduce the rise in excess mortality. Yet by the mid-1990s, the capacity of the curative health system was greatly reduced. Moreover, it failed to address the changing health needs of the population to reactivate the programs of the 1980s child survival campaign that had proven effective. Although the doctor- and bed-to-population ratios remained nearly stable, the number of reported operations dropped by 70% nationally, the number of laboratory tests performed dropped by 60%, and an estimated 30% of hospital beds were no longer in use. See Annex Figures 1, 2 and 3. About 75% of all hospital equipment was inoperable, and a quarter of the country's health centres were closed. Given the limited ability of the hospitals to function, average duration of hospitalisations dropped by about half. Virtually all-preventive health programs, with the partial exception of immunization, were suspended as the health systems struggled to maintain its curative, hospital-based services.

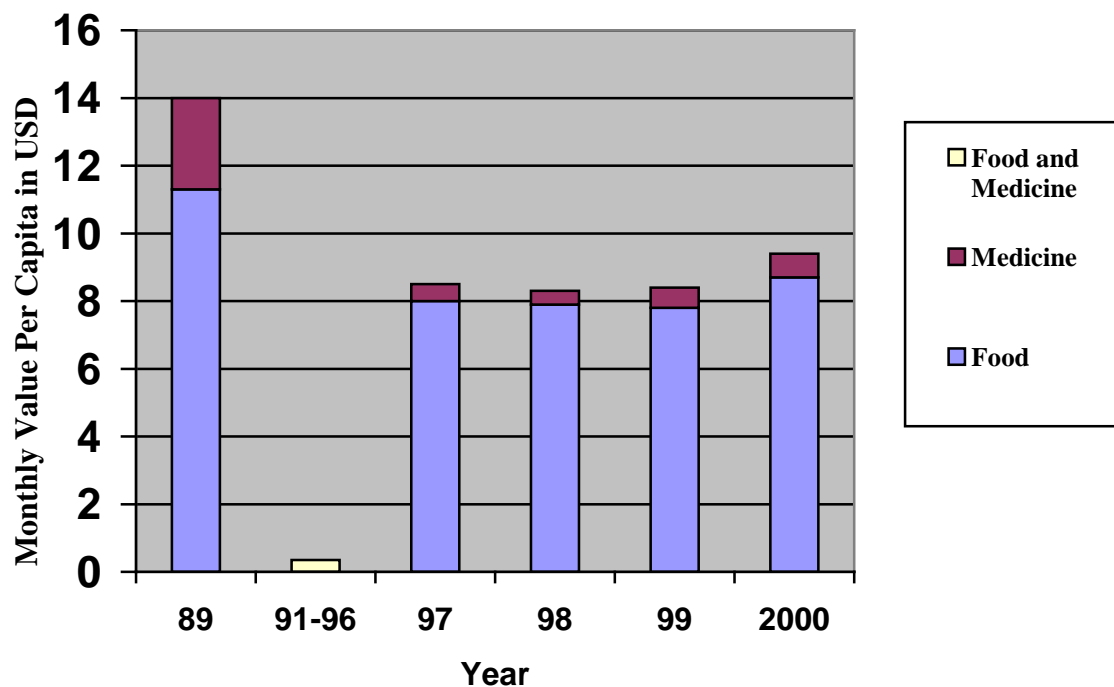
The Iraqi government resisted reorganizing services and administration, hoping that sanctions would end soon with a return to prosperity. The Iraqi national consciousness of 'sitting on a sea of oil' also mitigated a culture of adaptation to what became a severe and sustained capital shortage. Additionally, the highly centralized, one-party political system simply did not permit the Iraqi people to demand a more effective response by the government. While waiting in vain for the return of oil-based affluence in the early 1990s, Iraq was heavily isolated from potential international assistance in remodelling the health system. Major changes in the focus of the

health system were needed to encourage breast-feeding, promote measles immunization, introduce appropriate complimentary foods, screen and weigh children, provide supplementary rations for those in need thereby providing micronutrients Vitamin A, iodine, and iron, and focusing on simple and early interventions for diarrhoea, respiratory infections and malnutrition. These changes began in 1995 and have since grown slowly.

Ministry of Health (MoH) data should be considered unreliable except possibly for identifying general trends. The MoH failed to prioritise the collection of accurate and timely information and much of the information that was collected was neither checked nor released for public examination. Low birth-weight infants, children treated for malnutrition, and the reported number of illnesses which are associated with contaminated water all rose rapidly from 1990 through 1994 and subsequently levelled off at high levels by 1995. (See Annex Table 3).

Health sector imports fell from around \$500 million to \$50 million in 1991 and \$22 million in 1995. Food and medicine imports declined by 85-90% following the 1991 Gulf War. These imports included about US\$ 1 billion from UN and Non-Governmental Organization (NGO) during the period 1991 – 1996. See Figure 8.

Figure 8: Value of Medicine and Food Imports, 1989 – 2000



Source: Oil for Food Reports (7) and (15)

Per capita spending on health was reportedly \$17 in 1996; this is about one-fifth of per capita spending prior to 1990.

3.4. NUTRITION-FOCUSED POLICIES AND PROGRAMMES

In the context of social crisis in the early 1990s, mothers tried to improve their care of young children by marginally increasing breast-feeding. Rates of ever-breast-fed children reportedly rose from 89% in 1988 to 94.7% in 1996 (22), (23) and (24). Breast-feeding at 6 months of age rose slightly from 60% in 1988 to 65.4% in 1996. Food purchases consumed 54% of disposable income in 1972, declining to 43% in 1985 (48). Food purchases rose to 50% of family income during the Iran-Iraq war in 1988 and reached 72% in the Centre and South during 1993 even though most food was provided at nominal cost via monthly rations (48). When food purchases exceed 60% of income a crisis is at hand and rates as high as 70% have seldom been recorded. Most Iraqis were indeed in an extreme situation.

Medicines and food were partially withheld from the market and hospitals) when sanctions were instituted in August 1990 following the Iraqi invasion of Kuwait and stored for the future. Rationing of essential items, especially food, was instituted.

Following the imposition of sanctions, the amount of grain distributed by the government declined from 343,000 in September 1990 to 182,000 metric tons per month from September to December 1990 and to 135,500 metric tons per month during 1991 (UN). The ration had provided 900 – 1,300 calories per person in 1991; it was then gradually raised to 1,770 calories in 1992, providing approximately 70% of essential needs (26). The ration was reduced to approximately 1,100 calories in October 1994 owing to the inability of the government to import or produce sufficient food. It then fell to approximately 1,093 calories in 1995 (26). The inability of the GoI to provide minimal food to the population created great pressure to accept the OFFP.

4. Oil for Food Programme Period (1997 – 2003)

4.1. HEALTH AND NUTRITION STATUS

A review of demographic indicators in the 2000s in Middle Eastern Countries places Iraq as the fourth most populated country, third highest death rate, second highest infant mortality rate and second highest under 5 mortality rate. See Annex Table 11.

After 1991 there were no reliable data on mortality available for Iraq in the next eight years. In 1999 UNICEF, in cooperation with the Government of Iraq, carried out a methodologically rigorous indirect demographic survey (67). This study was carried out with international supervisors, frequent validity checks, and a national sampling frame. The survey demonstrated that the under five mortality rate in the centre and south which averaged 56/1,000 (95% C.I. 52-58) in the pre-Gulf war period (1984 – 1989), rose to 91/1,000 (95% C.I. 87-95) during 1990 – 1994 and then rose further to an average 131/1,000 (95% C.I. 127-135) during 1994 – 1999 (67). This rate had last been experienced a quarter of a century earlier (54). Rates for the Kurdish autonomous region showed an overall decline during the same period, from 80 to 72/1,000 under five year olds and from 64 to 50/1,000 among infants (67). Infant mortality in Centre/South (defined as the death of children in their first year) increased from 47 per 1,000 live births to 108 per 1,000 live births within the same time frame. Infant deaths were 18% higher and child deaths 23% higher in rural areas, in both North and Centre/South. Mortality rates for males were 10% - 20% higher. As in earlier surveys, the strongest predictor of mortality was the level of schooling of the mother. Mortality rates of children whose mothers

were without schooling, compared to mothers with intermediate or higher education, were twice as high in the North and about 30% higher in Centre/South.

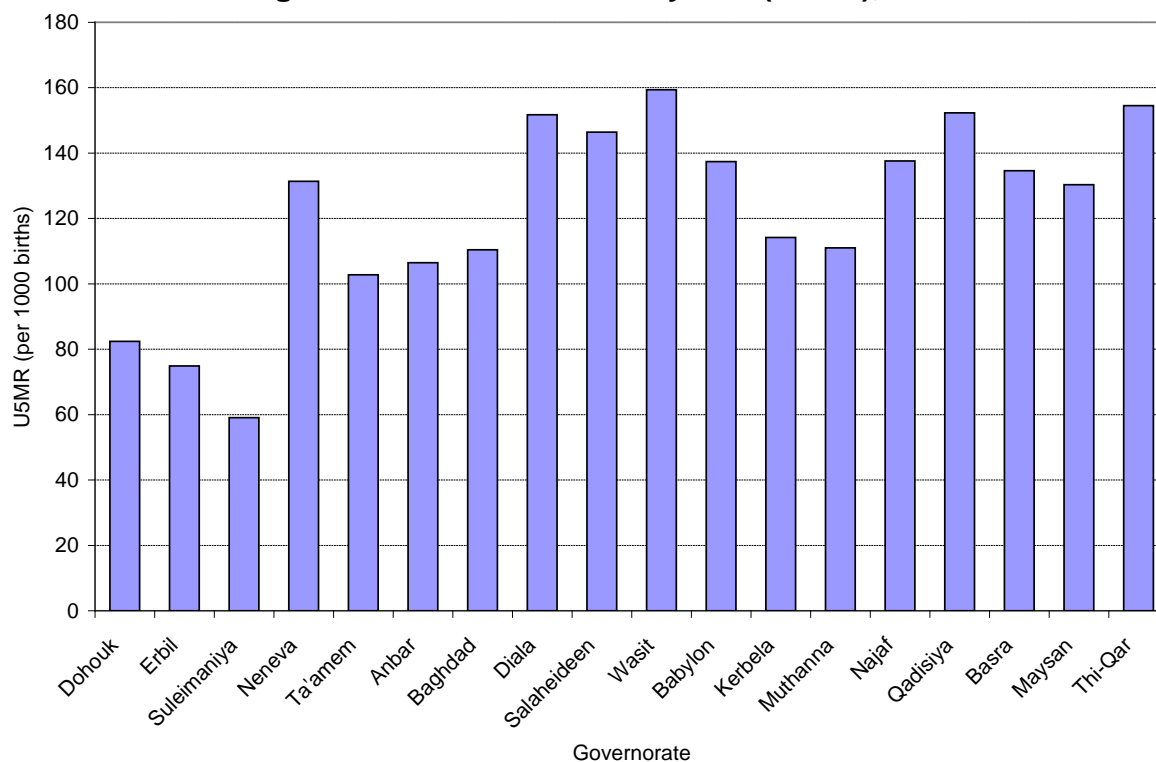
Since the end of World War II, mortality among children around the world has declined more rapidly than in any previous period in history. In the 1990s, 63 countries experienced a mortality decline of a third or more; an additional 100 countries had a decline of greater than 20% (73). Only 14 countries had an overall mortality increase among young children during the 1990s (10). Nine of them were in Africa, where HIV infection was the predominant cause of elevated mortality. Of all countries in the world, Iraq stands out as having experienced the greatest recorded increase in the rate of under-five mortality (68). (Afghanistan and a few other countries are estimated to have a higher rate of under 5 MR throughout the 1990s, but they did not experience a high rate of mortality increase. Higher rates of increase have been noted in the eastern zone of Democratic Republic of Congo during the later 1990s).

The rise in mortality among young children in Centre/South of Iraq in the 1990s was greatest among post-neonates (68). This was the age group for whom child survival activities had reduced mortality during the 1980s. Even with improved supply via OFFP, the health system responded only slowly and inefficiently to the changing disease profile and level of available technology in the country. Diarrhoea is believed to have become in the early 1990s the most common fatal pathology among young children. Diarrhoea should routinely be treated aggressively with oral rehydration solution (ORS), especially in poor countries, and mothers should be taught how to manage diarrhoea at home to prevent dehydration and possible death.

The 1996 Multiple Indicator Cluster Survey (MICS) demonstrated that while most mothers knew of oral rehydration, most health centres and mothers were not applying it correctly (23) and (24). Only a third of all mothers, for example, continued to give food during diarrhoea episodes. The second most common fatal pathology among under five-year-olds became acute respiratory infection. Yet in 1996, only a third of Iraqi mothers were able to recognize the major warning signs of respiratory distress. These high rates of preventable mortality are unusual for a country like Iraq. Even after six years of embargo, Iraq had a high rate of urbanization, relatively high literacy rates, and good access to doctors in a public system of care, and widespread mass media. In a reoriented health system these resources could have been used to address the major health needs of the population far more effectively by targeting families and communities with information/education. Instead, the main focus remained on supplying medicines and medical equipment to rehabilitate sophisticated hospitals to provide curative care. There are important lessons to be learned from the failure to reorganize the health system in 1997. These mistakes should be avoided now in the post war situation of 2003, especially with the complete change of the previous regime and new MoH administration. A similar pattern of increase existed in the North only for the year 1991, prior to the establishment of autonomous local administration (67). (See Figures 2 and 3 pg. 3).

Mortality rates among under fives in the 3 North governorates were less than half the rate (60 per 1,000) found in the Centre/South Governorates of Iraq (150 per 1,000) by the year 2000. See Figure 9.

Figure 9: under-five mortality rate (U5MR), 1999



Source: Mortality survey, 1999

No reliable data on changes in mortality among above age five group exist.

There are no population-based data on nutrition in Iraq prior to 1991. Data from the IST provide a post-war baseline (21). See Table 2. These rates, while lower than any other period in the 1990s, were surely higher than pre-war and pre-sanction levels in the late 1980s.

Table 2: Rates of Under-Nutrition Among Under Five Year Olds, 1991 – 2002

	1991	1996	2000	2002	Arab Countries Average
Acute Malnutrition	3.0	11.0	7.8	4.0	9%
Underweight	9.0	23.4	19.5	9.4	20%
Chronic Malnutrition	18.7	32.0	30.0	20.1	28%

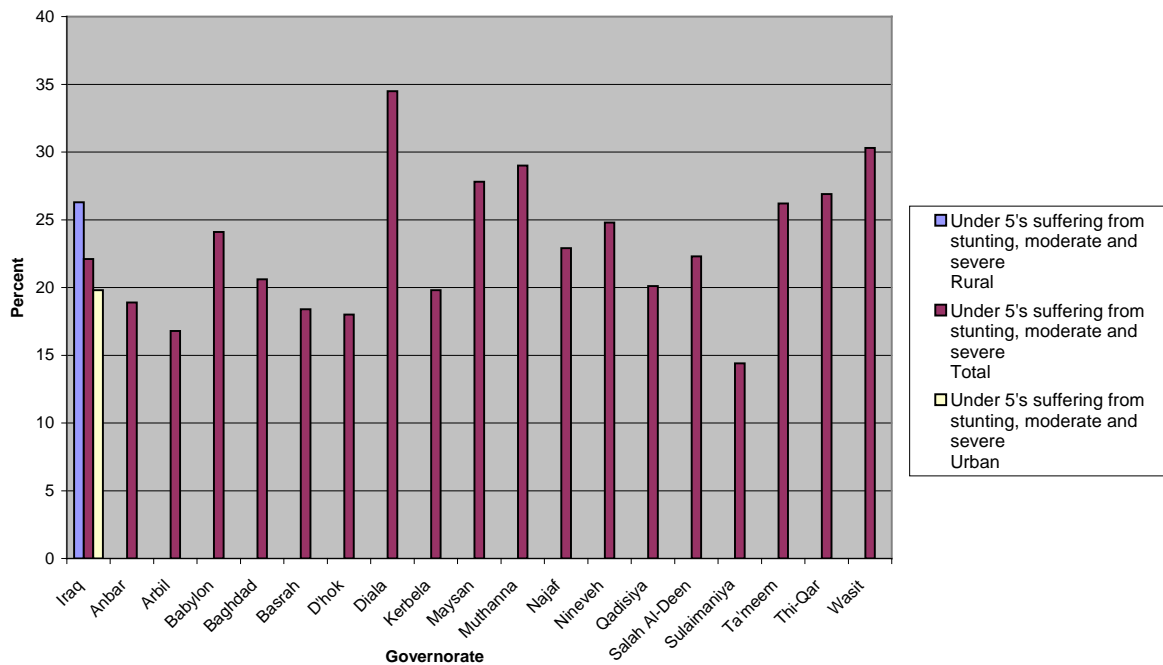
Sources: (21), (23), (24), (39) (70) and (71)

The 1996 Multiple Cluster Survey (MICS) undertaken by the GoI and UNICEF confirmed the serious nutritional status of young children in Northern Iraq. About one in every five children (19% or 95,000 children) was underweight (low weight for age), and 26% of children under 5 (or 130,000 children) were chronically malnourished (low height for age), with children aged 6 to 24 months most at risk.

According to UNICEF survey data on malnutrition prevalence in under 5 year olds for the Centre/South of Iraq in 2002, the percentage of general malnutrition has gone down to 9.4 % in

2002 (39). There was a similar decline in stunting to 23.1 % in and wasting to 4.0%. Iraq was approaching the levels of malnutrition present in 1991, near the beginning of the crisis. It had not had levels this low in a whole decade. Table 2 demonstrated that Iraq in 2002 had favourable rates of malnutrition in comparison to the average for Arab countries in 1991 (70). Rates that were higher in 1996 than the Arab country average in 1996, had declined to a level similar to Arab countries in 2000, and were again better than the Arab country average by 2002. By the mid-90s, the North had lower than average rates, which continued to decline after the year 2000. Moderate and severe rates or underweight malnutrition in the North (Dohouk, Erbil, Suleimaniya) were less than half (17%) in 2000. See Figure 10.

Figure 10: Under 5 children suffering from stunting, moderate and severe



Source: Iraq Multiple Indicator Cluster Survey 2000, Central Statistical Organization & UNICEF, Baghdad December 2001

Overall, indicators of mortality and well being show that by 1996 conditions in Iraq declined to levels that had last existed about 25 years before. See Table 3. Under OFFP, erratic ordering by the GoI delayed the processing and approval of contracts. This was followed by untimely deliveries, shipment of inferior or damaged goods, missing needed complimentary items, delayed installation and/or a lack of expertise for the correct usage of programme medicines and equipments.

The Government of Iraq first reported a decline in child mortality in February 2001 in an Iraqi newspaper (68). MoH monthly records show such a decline only in early 2002 (74). These data are drawn from hospital records, and were likely misrepresentations (65). In the context of an increase in the number of total visits to hospitals and a rapid decline in malnutrition since 2000, it is to be assumed that there has indeed been a decline from the very high levels of child mortality in the late 1990s. The decline from a high of 131/1,000 under five year olds during 1995-1999 may well be to a rate of 90 – 100/1,000. This decline is only moderate and was delayed from the initial re-supply of the health system via OFFP in 1997. It is important that reconstruction follow a different path if health conditions are to improve more and more rapidly in 2003. Actions should be based on the disease profile of the country, as detailed below.

Table 3: Evolution of Health Status

Indicator	Mid-1980s	1990-91	1996	Poorest Level After 1991 (Year)	Year When Previously at this Poorest Level	Most Recent Reliable Information (Year)
Infant Mortality Rate	52	42	97	102 (1998)	1970	1998
Under Five Mortality Rate	64	42	126	126 (1998)	1970	Below 100*
Chronic C/S malnutrition (Stunting) N	18%* 12%*	18% 29%	32% 26%	32% (1996) 37% (1994)	-	19% (2002) 11% (2002)
Maternal Mortality per 100,000 births	-	121	-	294 (1989-1998)	-	NA
Diarrhoea Episodes per Child per Year	-	3.8	-	14.4 (1996)	-	NA
Calories Available Per Capita	3926	-	-	1600 (1090 on ration + 500 estimated purchase 1995)	1961	2300 + 1000 (2003)
% Births Below 2.5Kg	5-9%	4.5%	-	12%	-	2000

Notes: (-) = Indicates no reliable data available, * Indicates projection. All other data from routine sources or representative surveys. Sources: (21), (22), (23) and (24)

Causes of Morbidity and Mortality

The epidemiological picture in Iraq by 1990 was advanced in the transition from the predominance of infectious diseases to chronic and degenerative diseases. Social decline in the 1990s led to a step back to epidemiological patterns characteristic of countries in transition, with both infectious and chronic and degenerative diseases among the major causes of illness and death.

When under-five mortality exceeded 100 per 1,000 in the 1990s, it is likely that infectious diseases were the most frequent cause of death in the country. The most common among these were surely diarrhoeal diseases and acute respiratory infections, which are said to account for 70% of deaths in children under 5 years.

Infectious Diseases

Diarrhoea incidence among under 5 year olds is reported to have increased substantially. In household surveys, it increased from 3.8 episodes per child per year in 1990 to 14.4 per child in 1999. Outbreaks of diarrhoeal diseases are especially common in the summer. Poor electric and water services, deterioration of infrastructure and poor sanitation habits, together with overcrowding contribute to cholera outbreaks (most recently in 1998 and June-August 2002) as well as other diarrhoeal diseases. Cholera became endemic in all governorates of Centre/South following the Gulf war period. Rural areas are particularly affected during April to November. (See Table 4).

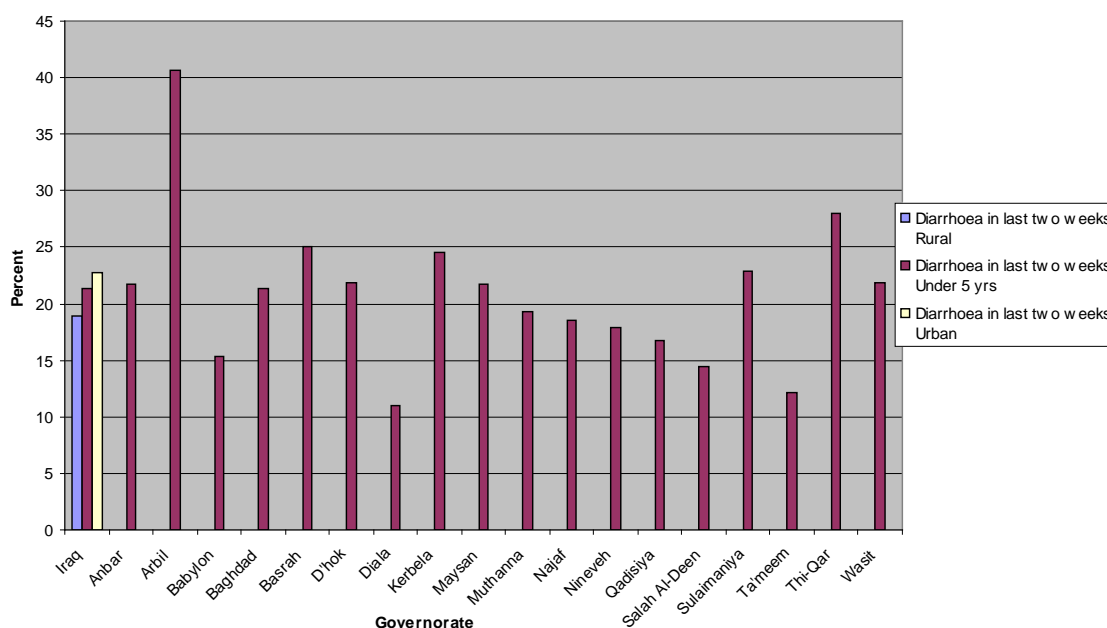
Table 4: Cholera Cases and Deaths Reported, Basrah 1998 – 2002

Year	Cases	Deaths
1998	53	1
1999	1985	30
2000	532	4
2002	718	0
2003	104	0

Sources: WHO

Among the health indicators in the MICS 2000 household survey, only rates of diarrhoea in the last two weeks were not lower in the 3 North governorates than in the rest of the country (average throughout the country of 15% - 20%). See Figure 11.

Figure 11: Diarrhoea in last two weeks



Source: Iraq Multiple Indicator Cluster Survey 2000, Central Statistical Organization & UNICEF, Baghdad December 2001

In a health facility survey of 1997, three-quarters of diarrhoea cases occurred in under 2 year-olds, with the highest peak in those 6-11 months. MoH data showed a decrease in the incidence of diarrhoea cases between 1998 and 2001. The MICS household survey 2000 showed that 30% of children under 5 years in northern Iraq had diarrhoea in the two weeks prior to the survey. The percent of Acute Respiratory Infections (ARI) cases dying in hospitals was reported as 2.9% and the percent of diarrhoea cases dying was 1.4%. This is often reported to represent a ten-fold increase.

The incidence of ARI increased in the early nineties, and has remained high over the last decade. 32,000 cases of ARI were recorded in 1990, while 152,932 were reported in 2000 (79). According to a survey conducted in health facilities in 6 governorates in 2001, of all under 5 year olds registered, 16% had pneumonia. In North governorates, a high proportion of children under 5 years had ARI in the two weeks prior to the survey (17.2% in June 2000; 12% in October 2000).

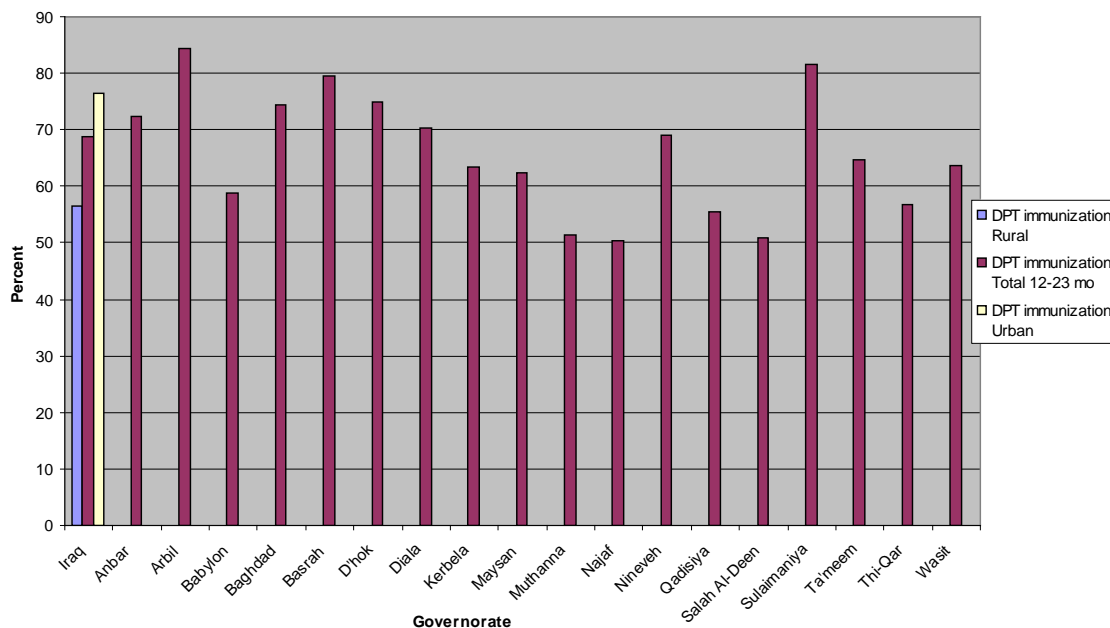
Measles is the third most common cause of registered death in children under 5 years of age in

Northern Iraq. In Centre/South Iraq, more than two-thirds of measles cases are now occurring in older children who most probably escaped immunization. Reports of other vaccine-preventable diseases such as pertussis (whooping cough) and diphtheria have also risen. The last pertussis epidemic occurred from June-December 1996 with 40% of those affected under 5 years of age. Almost 20% of children 1-4 years were not immunized (41). Pertussis has no seasonal pattern but tends to occur in summer/autumn months (June-Oct), while diphtheria tends to occur more in colder months. There were 2,312 cases of pertussis reported in 2001 (57) and (79).

Vaccines

By 1996 vaccine availability began to improve and by the end of the decade, coverage rates had largely recovered or exceeded pre-1990 levels (41). DPT coverage was higher in the North (80%) than in the rest of the country (17%) by the year 2000. See Figure 12.

Figure 12: DPT3 immunization



Source: Iraq Multiple Indicator Cluster Survey 2000, Central Statistical Organization & UNICEF, Baghdad December 2001

Immunization coverage rates identified by household survey were higher for BCG, OPV, and TT and lower for DPT than rates estimated by the routine reporting system. See Table 5. Continued reports of large number of vaccine preventable diseases, a polio outbreak in Northeast Iraq in 1999 (with no further cases reported to date since February 2000), and the fact that half of mothers did not have an immunization card during the 2000 MICS survey suggests that there continue to be great problems with the immunization service and the social mobilization to motivate public awareness and timely application. The cold chain has been a particular problem in assuring vaccine quality. Most of the equipment was newly purchased by the OFFP but old equipment included 160 of 710 kerosene refrigerators, 135 of 1005 electric refrigerators, and 3 of 18 cold rooms.

Table 5: Vaccine Coverage (Percent) 1998 – 2002

Vaccine	Estimated by Doses Provided					Household Surveys	
	1998	1999	2000	2001	2002	1996	2000
DPT (3 doses)	83	90	86	74	92	74	69
OPV (3 doses)	-	89	86	82	80	73	82
Measles	-	94	93	80	80	80	78
BCG	80	85	79	85	80	97	92
TT (Pregnant Women)					63	75	

Sources: (23), (24), (41), and (71)

While there has been partial recovery of the vaccination program, it has an excessive focus on the number of vaccines distributed and an insufficient focus on quality aspects of the system. These include the competence of the cold chain, education of mothers on the importance of vaccinations, promotion to assure that mothers keep an up to date health card for each child, and vaccination of target populations. Only 61 % of two year olds had received all vaccine doses according to schedule in 2000 (41). The country has remained polio free for the last 42 months.

The reported incidence of Tuberculosis (TB) doubled from 14,350 cases in 1989 to 29,897 cases in 1999. Fortunately, intense activities by the Tuberculosis Control Institute led to a reported reduction in 2001 of 11,413 cases (57).

A serious outbreak of Vivax malaria occurred in 1994 and 1995, leading to 94,236 and 98,705 cases, respectively (37). Risk factors included movement of people from endemic into malaria-free zones, increased population density, delays in access to effective treatment and a near total lack of control measures. Effective action of the MOH could have prevented the epidemic. There were 1,120 cases of malaria reported in 2001 (79).

Visceral leishmaniasis has increased in central and southern Iraq as a result of increased density of sand fly vectors, a lack of vector control activities, a decline in refuse disposal, and a lack of medical treatment. Effective health promotion actions now can interrupt the chain of transmission and prevent an epidemic in the coming months and years.

Non-Communicable Diseases

If under-five mortality has dipped below 100 per 1,000 live births then non-communicable diseases have become the top cause of death. First among these are cardiovascular diseases (CVD) and cancers.

Cardiovascular Diseases

The major modifiable cardiovascular risk factors are smoking, hypertension, hyperlipidemia, and diabetes. Virtually nothing is being done in Iraq to reduce these risks. The Smoking Control Committee reports a prevalence of smoking of 40% among males over the age of 16 years and less than 5% in females (38). Report of the most recent FAO survey includes data on body mass index (BMI) from adult population samples from Baghdad, Diyala and Karbala. 4-6% of adults had a BMI of less than 18.5 (chronic energy deficiency) but 47% had a BMI of 25 or over. Most of the overweight were male. Thus, despite a problem of under-nutrition (especially among children), Iraqis also suffer from a high prevalence of over-nutrition (especially among adults). This information is virtually unknown in Iraq, even in MOH.

The first population-based survey on hypertension was conducted in 1979. Using the cut-off levels of 160/90 a prevalence of about 12% was reported and only every fifth person with hypertension was aware of the diagnosis (36). In 1998, MoH provided medicines to 436,000 people with heart disease and 323,000 with hypertension.

Diabetes

A survey in 1979 revealed a prevalence of 5% in a small rural population in Basra (36). This high rate indicates that Iraq was experiencing an epidemiological transition with a rise in non-communicable diseases.

Before 1990, there were several specialized diabetes centres staffed with endocrinologists, ophthalmologists and nurses trained in diabetes care. Since 1990, it became difficult to maintain and staff these centres. As a result, internists treat most people with diabetes. A national centre for diabetes is located at Al-Kindi Hospital in Baghdad. There are no programs for patient education. In 1998, MoH provided medicines to 165,681 people with diabetes mellitus (57). There are no patients on continuous ambulatory peritoneal dialysis (CAPD). Also, dialysis machines are few and concentrated in large urban centres.

Cancer

The Iraqi cancer registry was established in 1976. Iraq was one of the first countries in the region to initiate a population-based cancer registry and a national cancer control plan. The Iraqi Cancer Board is chaired by the Minister of Health with members representing experts in cancer control and governmental, educational and research institutions. The Board has subcommittees on smoking control, cancer registries, prevention, early detection, radiotherapy and chemotherapy, and palliative care. It also has 14 provincial committees. There is no specific plan for cancer control or registration in the North.

The most common tumours are those of the breast (14%), lung (10.6%) and bladder (7.5%) followed by cancer of the lymphatic system. Leukaemia was the fifth commonest cancer in

1998 responsible for 5.8% of all tumours (ranked 7th in 1989) (36). The Cancer Registry reports an increase in the number and proportion of cases of leukaemia in the southern governorates since 1993. See Annex Table 4. It is not clear if this is the result of biased reporting; registry specialists are needed to evaluate and improve the quality of reported cases. Most tumours (50-80%) are detected in advanced stages and are thus incurable even if the best therapies could be offered. It is therefore mandatory to link therapy with screening initiatives adopting health education approaches for both the public and health professionals.

The MoH began a breast cancer-screening program in 2002. Nation-wide screening with mammography or cervical cytology is not cost-effective. Priority should be given to integrated primary prevention activities in primary health care and referral for treatment by specialists for a few curable tumour types. There is a pressing need to train full time medical and surgical oncology specialists.

Work on prevention has been focusing in principle on smoking control. A national campaign has been designed but no plan yet exists to implement it. Hepatitis B vaccination is now part of the Expanded Programme of Immunizations (EPI) but there are problems in the continuous availability of vaccines. Most bladder cancers are still of the squamous carcinoma type which is caused by schistosomiasis.

The department of non-communicable diseases and mental health is currently part of the General Directorate of Prevention. An advisory committee serves a similar function in the North. The Minister of Health chaired the national smoking control committee with members from the Iraqi Cancer Society, Armed Forces Medical Services, Women's Union, Youth and Students Union, Olympic Committee, Ministry of Health departments as well as the Ministries of Education and Information. A Presidential decree issued on 31 August 2000 prohibiting tobacco advertising went entirely unnoticed.

The Directorate of Preventive Medicine should extend its current responsibility for only chronic diseases and be encouraged to be proactive in addressing prevention of all types of diseases. Primary care physicians receive very little training and the MoH does very little orientation for the management and follow up of patients with chronic diseases. This is a rich opportunity to make medical care more efficient and effective.

Women's Health

Maternal mortality (MM) is high in countries with both poor living conditions and inefficient health services. MM was calculated from demographic survey to be 294 per 100,000 women aged 15 – 49 during 1989 – 1998 (67). This represents a more than doubling of the rate of 117 per 100,000 estimated in 1989. Most maternal deaths occur after delivery (61%) or during pregnancy (24%). Prenatal care or delivery with trained assistance and referral can prevent most of these deaths. 65% of births occur outside of formal health institutions; 79% of these were attended by traditional birth attendants (TBAs) in 1998. The proportion of women delivering without trained assistance went up during the 1990s, to 30% in urban areas and 40% in rural areas. About 80% of women reportedly received some kind of prenatal care, but only 60% received postnatal care. Since 90% of newborns receive post-natal care, an opportunity to improve coverage care among post-natal women exists. Of those women who delivered in public or private health institutions, many received inadequate care because essential drugs were missing, transport to more advanced institutions was poorly organized, or doctors lacked

training in emergency obstetric care. It is mainly referral institutions at a district level which have the capacity to attend complicated births; about half of these lack some key resources to provide appropriate care. Women are at increased risk for poor birth outcomes with high rates of anaemia (51-70%), short birth intervals (41% spaced less than 2 years apart, high total fertility (7.7) and early marriage (40% prior to age 18) (67). Some 15% -20% of deliveries are at high risk and need advanced medical support. Efforts are needed to develop or strengthen the referral system to ensure referral of complicated cases to institution that deliver emergency obstetric care

TBAs assist women who do not have professionally supervised births. There have been some efforts to train and integrate TBAs into the health system. It is reported that this has been successful, resulting in increased referral of pregnant women for prenatal care and delivery services. This effort should be greatly expanded as part of primary care.

Contraceptive prevalence went up from 14% - 25% nationally, but this still falls far below demand and far below the average for Arab countries in 2000 of 51% (23), (24), (70) and (71). Rates varied from 5% to 47%, by governorate. There are 147 family planning clinics run by MOH and 46 run by the Iraqi Family Planning Association. Only 550 of the country's more than 1,700 public hospitals and health centres are equipped to provide emergency obstetric care. Addressing the primary health care needs of pregnant women, and the secondary care needs of women with complicated deliveries, will greatly improve birth outcomes and reduce maternal mortality.

Mental Health

Information on mental health status is limited to that which is available via the services provided by the two mental hospitals in Baghdad and wards in several other regional centres. This provides no information on the magnitude of need, coping mechanisms, or adaptation methods for any population groups.

4.2. FACILITIES, PERSONNEL, AND ADMINISTRATION

In May 1997 when the first OFFP supplies reached Iraq, visits to health centres and hospitals, and the number of x-rays, lab tests, surgical procedures, and prescriptions provided by the public medical care system had each decreased by about one-half. Goods provided via OFFP had a dramatic, if limited effect on the health system. Before 1996, 148 ambulances served Baghdad; after 1996 only 4 ambulances worked in the capital city. Although OFFP provided 1,270 new ambulances (57), some were soon out of service as the imported models required new maintenance expertise and a large bank of spare parts. Furthermore, the Iraqi government estimates that 2,000 patients needing emergency care died because all air transport was grounded, from 1991 to 1999 (3).

In 1998 the Ministry of Health reported that the use of public ambulatory health services rose 42% from March 1997 to March 1998, hospital stays became longer on average, and more lab tests and x-rays were performed per patient (74). In what appears to be a political manipulation of the data system, rising utilization was later reported to be far more modest. In November 1998 WHO/UNOCHI surveys showed that an average of 44 % of 18 essential medicines were available in health centres. Overall, 22 % of all formulary medicines were found in hospitals and health centres, and 32 % of medicines were available for patients registered with chronic

diseases (74). In August 1998 essential medicines were unavailable at clinics in the Centre/South, an average of twenty-four days per month and by December 1998 this declined to eight days per month. Fewer shortages existed in the North.

Human Resources

Iraq needs more health workers, but it mainly needs a more appropriate mix of health workers with skills to deal with the basic health needs of defined populations rather than sophisticated needs of a small number of individual patients.

Unverifiable reports from a variety of sources show a rapid rise in the number of health workers in Centre/South. This represents a more than doubling of the number of practitioners during the 1990s, resulting from the actions of the GoI to make up for high emigration of health workers in the 1990s. See Table 6.

Table 6: Number of Medical Personnel, 1993 – 2000

Year	Specialists	General Practitioners	Dentists	Pharmacists	Nurses	Nursing Assistants
1993	1,632	4,827	97	893	----	----
1999	3,028	7,804	2,093	2,044		10,806
2000	3,650	9,260	2,150	1,815	5000	----

Sources: Central Statistical Organization (CSO) and MOH (66)

The distribution of health workers shows a strong emphasis on hospital-based care. (See Table 7).

Table 7: Distribution of Medical Personnel, Centre/South, 1999

	Physicians Specialists	Physicians General Practitioners	Dentists	Pharmacists	Nursing Assistants	Dressers	Para-Medical Staff
Hospitals	2,547	5,503	168	1202	10,342	1,389	34,701
Primary Care	481	2,301	1925	842			

Sources: CSO and MOH (66)

Total health workers in Iraq were 11 per 10,000. These included 10,832 physicians registered in 1999 in Centre/South Iraq. One quarter of these were hospital based and more than a quarter of all physicians in the Centre/South were specialists. Less than a dozen of them were in community or social medicine. The doctor to population ratio was 1 per 1,926 people, or 53 per 100,000 people (75). Most physicians have part time private practices. This is a relatively low doctor to population ratio, given low disposable income level in most households. Iraq has limited ability to support more physicians in the private sector. See Table 8.

Table 8: Human Resources in the Health Sector per 100,000 Population, 2002

Physicians	53
Dentists	11
Pharmacists	8
Nurses	2
Nursing Auxiliaries, Aids, Others	44

Source: (75)

Far more problematic was the situation in nursing. In Iraq, there were almost the same number of nurses and nursing auxiliaries, as there were doctors. In most countries, there are 3–6 nurses and nursing auxiliaries per physician. Among nursing staff, few were professional or trained nurses. Iraq has more than twice as many physicians as nurses; there should instead be at least two nurses per physician. Among all nurses, only a small fraction are graduated from university nursing schools; more than 80% of trained nurses are graduates of high school or post-high school nursing institutes. Only a handful of those trained in other countries have any background in public health. A large cadre of well-trained nurses will be needed to retool the health system to primary care, health education and promotion, and targeted disease prevention programs.

Entry to medical school was partly determined by location of residence. This helped to insure a remarkably equitable distribution of all doctors and specialists throughout the country. From the highest to lowest doctor to population ratio governorates, there was only a 2-fold difference. See Table 9.

Table 9: Medical Specialists per 100,000 Population, 2000

	Specialists	Total Doctors
Baghdad	16.4	61.2
Ninewa	9.0	37.4
Basrah	11.5	47.5
Thi-Qar	7.1	22.9
Babil	13.9	50.6
Diyala	11.5	35.1
Anbar	13.5	45.8
Salah al-Din	15.0	42.9
Najaf	14.8	47.8
Wassit	14.3	36.2
Qadissiya	10.8	41.2
Tameem	17.8	49.2
Missan	8.3	23.5
Karbala	14.6	50.0
Muthanna	11.8	35.2
Sulaymaniyah	27.7	71.9
Erbil	7.3	44.8
Dahuk	5.8	54.4
Total Iraq	13.5	47.7

Source: MoH

A review of Health Resources in Middle Eastern Countries in 2002 reveals that Iraq had the fourth lowest number of physicians per 1,000 population and that it was tied for fifth place in the number of hospital beds per 1,000 population. See Annex Table 12.

Training

There are 17 medical schools, seven colleges for pharmacy, six for dentistry and three university nursing schools but no university schools of allied health sciences. Nursing does not have a licensure procedure; institutions call any and all untrained staff nurses. Nursing specialties of community health, rehabilitation medicine, and health education and promotion do not exist in Iraq.

Public health also does not exist as a field in Iraq. The closest fields are community medicine and microbiology. There are no programs for training health managers, budgeting, or epidemiology. Such programs are urgently needed.

Medical and nursing schools should review the curriculum and teaching methods that have not been revised in more than a decade. There are few instructors for basic sciences, medicine is made up mainly of 3000 lecture hours, and there are few purpose-built buildings on any campus.

The Ministry of Higher Education has strictly controlled a uniform curriculum for health professional schools throughout the country. This Ministry no longer exists as such, leaving a wide-open opportunity for curricular innovation. These curricular plans did not benefit from input from the Ministry of Health authorities, community groups, or local authorities. They should be changed and allowed to experiment according to local needs and interests. Perhaps now, under guidance from the Iraqi Commission of Medical Specialties, this will happen.

During the 1990s the country increased the number of medical schools from 11 to 17 to compensate for the emigration of many medical professionals. This created many institutions lacking competent faculty and the mass production of students of declining quality. Nearly every governorate now has a medical school, and there are 8000 students countrywide. They perform a 2-year internship and one year rural social service. Some of these schools should be closed or combined and the total number of medical schools reduced by about half. The number of schools and students in university level schools for nursing and allied health professions should be greatly increased.

A plan for organizing training programs for specialty nursing in areas like oncology, diabetes and cardiovascular nursing should be developed. During the 1990s most health science schools were isolated from international developments in their fields. Journals stopped arriving and few professors were able to travel. When computers and library facilities were made available through OFF in the late 1990s, the culture of isolation changed little and access to evolving scientific knowledge and administrative approaches to teaching and practice were largely unknown. Most faculty need immediate training in teaching methods, evidence based health care, and the use of the Internet and computers for teaching and research.

Facilities

Few institutions have facilities and staff capable of providing modern triage, trauma, and emergency medical care. The supply of ambulances and ER equipment via OFFP was not accompanied by training, supervision, or modernization of communications needed to make this happen. The MoH maintains Blood banking in central urban facilities. This means that district hospitals often have poor access to blood products. About a quarter of the ambulatory

care centres were reported to be in urgent need of repairs in 2002. Most health centres are staffed by physicians, about a quarter have only nurses to provide basic care and are visited weekly by physicians. It was reported that 31 military medical system hospitals and around 11,000 staff that would be converted to civilian public facilities (WHO).

In 2001, WHO reported the following totals of facilities in the northern governorates: 45 hospitals, 9 specialized treatment centres and 563 clinics. A total of US\$ 586.9 million was allocated under Special Allocation funding for reconstruction of facilities in the medical sector over phases IX – XIII (57). A total of 9 contracts valued at US\$ 203.6 million for construction/rehab of hospitals and health centres were submitted under Special Allocation funding and 4 contracts valued at US\$ 83 million for rehabilitation and construction of medical facilities were submitted under Medicine/Health funding. During November 2002, the first Special Allocation contract to build a cancer centre in Baghdad (valued at US\$ 18 million) was approved and in Jan. 2003 the second contract for building materials for the rehabilitation of health centres (valued at US\$ 14 million) was approved (57).

The number of PHC facilities per person varied widely, from 4,700 to 39,000 people per facility. This is an appropriate distribution given differences in population density. Visit to public facilities as recorded by the MoH showed a generally equitable distribution around the country. Sparsely populated Saladin had more doctors per population, but fewer visits. There was far more variations among specialized centres, as there are few of these in some outlying governorates. (See Table 10).

Table 10: Public Visits per 1,000 Persons in Centre/South Iraq, 2000

	Emergency	Specialized Centres	PHC Centres
Baghdad	151.6	123.2	671.6
Basrah	212.7	27.3	726.2
Ninewa	188.7	28.5	947.8
Missan	78.3	13.4	708.9
Qadissiya	195.4	23.4	650.8
Diyala	86.8	105	548.3
Anbar	130.9	1.3	513.5
Babil	161.7	24.3	348.1
Karbala	145.7	28.7	355.6
Tameem	203.4	59.6	1040.8
Wassit	120.1	208	723.4
Thi-Qar	130.5	0.8	551.6
Muthanna	171.3	47.4	468.3
Salah al-Din	105.4	4	961
Najaf	81.4	0.5	388.1
All	147.5	42.5	650.2

Source: MoH

Pharmaceuticals

In 1989, the Ministry of Health spent an estimated US\$ 500 million in foreign exchange for imports. This included:

- 360 million dollars for imported pharmaceuticals, vaccines, medical appliances and disposable supplies;
- 100 million dollars for raw materials for Samara Drug Industries that supplied 30% of the needs;
- 30 million dollars for replacement parts and maintenance of health services equipment; and 10 million dollars for ambulances and logistical vehicles *(15) and (57)*.

In 2001, media reports attributed to the Minister of Health/GoI mention that before 1990 there were approximately US\$ 1.25 billion of drugs and medical supplies in country.

The GoI began a rationing system in September 1990, covering medicines for patients with chronic diseases. WHO estimates that from 1990–1997 approximately US\$ 40 million per annum was contributed by the GOI for medicines, covering about 15% of needs.

Kimadia (the State Company for Importation and Distribution of Drugs and Medical Supplies) has six main Central warehouses for imported or locally produced drugs. Prior to 1990 Kimadia produced about 35% of medicines consumed.

Most local pharmaceutical production facilities, Samara Drugs Industries (SDI), closed down following 1990 or reduced production for lack of investment or raw materials. At the start of the OFFP 1997, there were almost no drugs at all levels of health institutions and the logistics needed to support the drug distribution system by Kimadia barely existed. Medical sector producers included the semi-private Arab Company for Antibiotics Industries (ACAI), producing up to 300 million capsules and 28 million vials of injectable antibiotics per year. The /Ninevah Intravenous Fluids Plant produces up to 19 types of IV fluids, covering 40% of national demand. The Babylon Syringe Factory produced up to 80 million disposable syringes per year. SDI went from use of 5% of productive capacity in 1997 to about 50% in 2002, representing about 15% of medicines consumed in the country *(74)*. Local drug/medical production by SDI and others received US\$ 388.58 million over Phases IV – XII of OFFP. SDI products were available commercially in pharmacies in neighbouring countries. The potential to stimulate production of pharmaceuticals for domestic production and export is great.

The Two-Year Assessment and Review exercise of the SCR 986 operation (March 1999) estimated that the reconstruction of the health care system in Iraq required at the time, at least, investments in the range of US\$ 2 – 3 billion.

The MoH/Kimadia distribution network received from OFFP vehicles for drug and employee transport (2,617 out of 3,667 ordered) and equipment related to drug handling in the Central warehouses such as forklifts -manual or trucks- (449 out of 540 ordered). A total of 1,270 ambulances had arrived out of 1,971 ordered. Also, 883 generators out of 1,109 ordered arrived *(57)*. The inventory/record keeping at Kimadia central, and Governorate DoH warehouses also

improved due to the updating of the computerized program (Micro-Drug). The increasing complexity and scope of program inputs overwhelmed the memory capacity of the outdated computers provided in 1997.

At health centres patients typically received lower than recommended doses of drugs, due to rationing. By the late 1990s, over-prescribing or erroneous prescribing were frequent. Up to half of medicines provided to patients are not indicated according to international prescribing standards (6). Retraining of physicians with modern formulary and evidence-based practice principals could reduce the cost and misuse of pharmaceutical products by up to a third.

To ensure the availability of essential drugs for chronic diseases, a system operating through a nation-wide network of public clinics (Iyadat Shaabiya) was established in 1993. People with chronic diseases were provided with a card that enables them to dispense their prescriptions from MoH's chronic disease pharmacies. The total number of people with chronic disease cards in the Centre/South governorates in 1998 was 1,046,385 (with about 200,000 in Baghdad). This provides an excellent opportunity for health promotion and evidence-based treatment among patients followed via the public system of medical care.

Private Sector

The mix of public and private services in Iraq is complicated and has been dynamic since the government stopped restricting private practice in 1994. This was done mainly to retain physicians, many of whom left the country. It was extended in 1998 to hospitals, where institutions were permitted to charge cost-recovery fees. These fees have been used to purchase supplies and provide as much as 80% of medical income. All public hospitals and clinics were integrated into this system in 1999, wherein patients pay a base fee of at least 250 dinars (\$.25 US) per visit. Out of pocket costs for health care had been estimated at 40% of all expenses; with self-finance this was assumed to rise to 60% (81).

Physicians and dentists were always permitted to have private fee-for-service practices after a required period of social service. Most do establish such practices, but it is not clear how many patients they attend to. The government in the 1970s discouraged this approach. In the 1990s, to retain doctors, Public Clinics (PC) were used in the afternoons for semi-public practice. The arrangement kept physicians attending clinics in the morning and helped them to establish private practices. Of the 834 PCs with doctors in C/S, 684 were reported by GoI to serve as semi-private clinics as well (78). There are about 3,000 private pharmacies; all received allotments of some products from Kimadia at heavily subsidized prices. They were also limited in this way to dependence on the government for supply and the government also set prices. About 10% of Kimadia stock is provided to private pharmacies in the south; no distribution to private pharmacies exists to the North.

A system of private hospitals grew during the 1990s. The 71 private hospitals were not able to provide better technical services than the 211 public hospitals, but they were cleaner, had more nursing staff, and provided more hotel functions (1). Most of them were doctor's hospitals with less than 50 beds. Public hospitals also responded to the demand for such beds by charging for private rooms and providing better hotel services to these patients. About 500 of the country's 1,400 clinical laboratories were private.

4.3. POLICY AND FINANCE

A lack of policy development in the health system, inherited from earlier periods, continued after 1996. Highly centralized political decision-making was both inefficient and largely ineffective at improving health conditions. Sanctions and the OFFP provided convenient rhetorical excuses to the regime for its failures in this area.

The value of commodities subsequently imported for health and nutrition in Iraq through the OFFP far exceeds any previous humanitarian commodity supply effort. It was also unique in that it was funded, under duress, by the government of the affected country. Yet the centrally managed distribution of key goods made the program consistent with routine administrative practice in the country. Furthermore, the large dollar value of the program fed the continuing goal of re-establishing an import-based, capital-intensive service model similar to those in developed countries.

As at the end of the thirteenth six-month phase, the health sector was the fourth largest recipient of OFFP revenues. A total of US\$ 4.749 billion was allocated. 73% of this was for the South/Centre (59% Account) and 27% for the North (13% Account). As of February 2003, a total of 3,953 medical applications (59% Account) valued at US\$ 3.2 billion were received by the Secretariat. About half was for medical equipment, spare parts and supplies; the other half was for medicines (57). See Annex Table 7 for details by phase. As at 31 January 2003, the WHO reports that since the start of SCR 986, a total of US\$ 2.139 billion of Phases I – XIII medicines, medical supplies and equipment had arrived in Iraq; US\$ 1.735 billion had been distributed (81.11 %); and US\$ 404.1 million represented the storage of medical stocks in Government warehouses (18.89 %).

Oil sales in the first twelve six month cycles of the OFFP supplied \$25 billion in medicine and food imports. Another \$11 billion was in process; the remainder was either on hold or not yet committed (OIP). This provided a value of humanitarian imports more than 2/3rds of that imported per person in 1988-89. The increasing value of oil sales and growing efficiency in processing orders in 2000 actually raised the value of humanitarian imports to above pre-sanction levels. Direct comparisons should not be made, as most of the OFFP imports were finished goods, whereas prior to the first Gulf war imports included producer goods that multiplied in value as finished products. In 2000 the GoI estimated total public investment in health at \$65 (81). These OFFP funds are somewhat less than the estimated \$87 per capita spent by government on health prior to 1990.

Furthermore, this \$65 bought less than previous allocations to health. Most of it went to imported goods, which were far more costly than nationally finished goods. Some of the international imports were very poorly used. For example, \$15 million was used to purchase ultra-modern dental units that never went into service. Further millions went for lasers for corrective eye surgery for the elite, while routine vaccines were often not purchased and had to be supplied on an emergency basis by international organizations.

During the OFFP, investment in imported medical goods was not matched by internal investment in salaries, training, and physical plants. The latter items would normally have come from regular GoI budget, but few funds were made available from any source. 'Special Allocation' budgets siphoned off public funds to the President's pocket. OFFP thus limited the health system, making it commodity-rich and human capacity-poor. The deficit in training in

health administration and public health before 1990 was continued throughout the crisis period of the 1990s. Another key drawback was that in the Centre/South, there was no cash component for implementation of projects or for incentives to staff.

Some of the stunning increase in mortality among under-fives may be related to capital shortages and drought that would have affected Iraq even in the absence of the political crisis associated with the Gulf War and sanctions. How much these factors influenced conditions is not known. No information systems were established to monitor humanitarian conditions or evaluate efforts to relieve suffering and the existing information systems of MoH were increasingly deteriorated and politically manipulated during this period. GoI limited OFFP evaluations to studying commodity delivery systems and not humanitarian conditions overall. Despite UN Security Council resolutions in 1998 and 2000 calling for a comprehensive evaluation of humanitarian conditions in Iraq, neither the UN nor the Government of Iraq facilitated such an effort. More than a decade after one of the major humanitarian crises of our time began, the specific causes of this damage were not clear and we remain without a minimally adequate information base to address it.

One positive development in information system policy occurred in response to the polio epidemic of 1999. To improve immunization coverage and identify cases more effectively the Division of Preventive Medicine started to use EPI- INFO software in 2000. Early in 2003, it initiated the automation of data entry, analysis, and reporting for communicable diseases.

A review of health expenditures in Middle Eastern Countries in 2002 shows that Iraq's Gross Domestic Product (GDP) was the eighth largest and the GDP per capita was the third lowest See Annex Table 13.

4.4. NUTRITION-FOCUSED POLICIES AND PROGRAMMES

In 1989, the National Child Health Survey found that 89% of mothers in Iraq breast-fed their babies; this rose slightly to 94.7% by 1996 (19). Breast-feeding at 6 months of age rose slightly from 60% in 1981 to 65.4% in 1996. But according to a October 1997 study, 21% of all infants in central and southern Iraq were exclusively bottle fed, only 13% of infants were exclusively breast-fed during the first 4 months of life (compared to an average of 37% in all Arab countries), and 34% of 6- through 9-month-olds received milk without any supplementary weaning foods (3) and (70).

The high rates of bottle feeding or breast-feeding without supplementary foods created a large group of children at especially high risk for poor nutrition, depressed immunologic levels, and increased vulnerability to diarrhoea, and acute respiratory infections. This worsens especially when access to high-quality foods is limited, access to curative medicines is inadequate, and the quality and quantity of water is poor. Mobilization of the health and welfare systems to insure maternal and child nutrition through improved weaning habits, expanded breast-feeding promotion, preferential access to food for women and children, and simple early intervention to reduce morbidity through diarrhoea and upper respiratory infections were needed. Such mobilization in education, and health promotion has been virtually absent since 1990.

Some actions, such as the inclusion of infant formula in the ration in 1998, actually discouraged breast-feeding. The UN recommendation to the Government of Iraq for removal of infant formula went unheeded. Bottle feedings among infants increased from 21 % in 1996 to 31 % in

1998 and the introduction of complementary semisolid foods failed to reach a third of children ages 6 through 9 months (23) and (24). Modifying hospitals to become baby-friendly supports breast-feeding. A total of 31 hospitals in Iraq achieved the rating of being a baby friendly hospital. A survey in 2002 reported that exclusive breast-feeding among 0 – 4 month olds rose from 17.1% in 2000 to 30.7% in 2002.

The Iraqi legislature drafted and the cabinet approved a code on the protection and promotion of breast-feeding in 1994. It was then submitted to the President's office but was never approved. At that time infant formula had been taken off the ration and the price of formula in the marketplace rose rapidly. It is assumed that this experience convinced the government not to implement the code despite heavy advocacy by UNICEF, paediatricians, and many international visits.

The rate of low birth weight was reported to have risen to greater than 20% in Iraqi government hospitals during 1995-1999. Such data is highly suspect as it is inconsistent with expected levels in comparable countries and demonstrates an opposite trend to the slow improvement found in all other child health and nutrition indicators (65). It is thus considered invalid and will not be included for further analysis here/within the scope of this study.

There has been considerable confusion about malnutrition levels in Iraq. Solely the surveys presented in Table 2 and Figures 4 and 5 were national in scope; they were based on households and generated a representative sample to some extent.. Other studies are based on clinic exit surveys; they provide less representative samples of the population of young children than a household survey. The results from the two types of surveys cannot be directly compared.

Prior to April 1997, the food ration provided by the Government of Iraq satisfied about 50% of daily caloric need and did not meet the full requirement for energy, protein and most essential vitamins and minerals (42). Furthermore, economic difficulties prevented many Iraqi families from fully complementing their food requirements through market purchases. The nutritional status of children and women deteriorated far more than that of men.

The ration declined to 1,093 kilocalories per person per day prior to OFFP. It rose to 2,215 Kcal by September 2002. This makes it one of the most calorie-rich ration programs in the world. Rations provided by the Oil for Food Programme are not sufficient to cover all the micronutrient or protein needs of the population. It is nonetheless a popular program and continues a tradition of government subsidization and management of food distribution. In the North, 5% of people sold part of the ration. Greater poverty in Centre/South means that more people there sell the ration. Perhaps the highest rate of selling rations was among the Marsh Arabs. Upon their return to the drained marshes in 2003 they were left without their traditional sources of income, and as a result about half sold part of the ration.

In the North, about a quarter of all families both grow and purchase considerable additional foods (49). The poorest families barely get by on the ration, facing some days without food each month. In contrast, affluent families perceive greater food needs, reporting/complaining that the rations provides for food needs during less of the month, and are frequently obese. By 2003, the rationing programme included the following items: wheat flour, rice, sugar, tea, cooking oil, milk powder, dried whole milk and/ or cheese, fortified weaning cereal, pulses (beans, chickpeas and lentils), iodised salt, soap, and detergent. The Targeted Nutrition

Programme (TNP) includes therapeutic milk and high protein biscuits. 350,000 metric tons of food per month was provided by the OFFP food ration (WFP).

Anaemia among pregnant women reportedly rose from 51% in 1995 to 60% in 1999. The GoI began local production of iron and folic acid tablets in November 2002.

Nutritional promotion and education was stimulated by Nutrition Rehabilitation Centres (NRCs) and Community Child Care Units (CCCUs). Twenty NRUs were initiated in hospitals and health centres in 1995 (35). CCCUs started with 100 centres in 1996. These centres were designed to distribute extra food rations to children (based on weightings), which are supposed to be accompanied by health education. Like many such programs around the world, evaluators found that these centres provided little education and health promotion. In 2002 there were in the 15 Centre/South Governorates, a total of 67 NRCs in hospitals, 548 NRCs at Primary Health Centres, and 3,000 CCCUs (42). Some 13,000 CCCU volunteers have been trained in the rehabilitation of malnourished children and screening/growth monitoring activities. Of these, 95% were teachers, and most of the CCCUs were located in primary schools. Around 1.1 million children were screened via this system in 2002 (52). It is believed that this covered 7% of children and half of the pregnant women in the country.

In the Northern Governorates there were growth promotion programmes in 61 of the 418 PHCs before SCR 986. As of May 2000, UNICEF reports that in the Northern Governorates there were 215 CCCUs, 13 NRCs, 350 Growth Monitoring Units (GMU) and 195 Therapeutic Feeding Centres (TFC). As of 30 April 2001, UNICEF reports a total of 400 growth-monitoring units and 269 CCCUs. See Annex Table 5.

Food purchases fell to 37% of income in the North in 2000 (49). Throughout the country, the market price of the food basket declined by about 30% from 2000 – 2002 due to increased productivity with OFFP inputs and an end to the region's drought.

5. Key Lessons

The health and nutrition sectors in Iraq declined as a result of wars, sanctions and poor government policies. The Oil for Food Programme was not meant to substitute the country's economy but to mitigate the suffering of the Iraqi people. Responsibility for the decline belongs to both the previous regime and the inadequate nature of the OFFP response. For future planning, key lessons include the following:

- It is essential to invest in human capacity to cope with given situations, rather than focusing solely on capital goods and supplies for the health system. This helps assure the good use of investments, and helps provide maintenance and supervision to maximize the benefits from existing supplies.
- Sanctions should be targeted in ways to protect the health and well being of the population. Monitoring their effects should be initiated immediately upon designation of sanctions and continued throughout the period that they remain in place.

- There is a need for the Directorates of Health (DOHs) to make clear, specific budgets. Budgets and the budgeting process should be transparent. This will facilitate policy and capacity development. Lacking this, policy direction has been overly centralized and politicised.
- The separation of the educational system from the medical care service system in Iraq has kept the country from training students appropriate to the health situation of the country and limiting reform. Universities should develop collaboration with the Ministry of Health, which should also orient teaching and research in medical schools.
- Uniform medical education, directed by the Ministry of Education, is not an effective model in an information technology world. Curriculum must become more open, flexible, and oriented towards solving problems (problems based learning). Experimentation and innovation must be permitted and encouraged.
- The organization of the health system in Iraq has long been modelled on the epidemiological conditions of other countries (UK and US). It has done little to improve living conditions, and what has been done has been achieved at a high cost. The system should be reoriented on the basis of the morbidity and mortality pattern of the country. Good information systems and dissemination of the information it yields is essential.
- Despite weaknesses, the health system has many strengths and resiliencies. Successful components of the system, such as the chronic disease card system or local drug production apparatus, should not be lost in the process of health reform.
- The private sector has become strong and can respond to much of the perceived demand or the sizable portion of the population willing to pay for services. Again this reinforces the need for the public system to deal with essential public health needs, while transferring other needs and interests to the private market.
- The implementation of the humanitarian programme was constrained to the Centre/South governorates where no OFFP funds were available for local purchases, salaries, incentives or training.

6. Post 2003 War Assessments and Findings

Personal observations are combined with recent or on-going assessments to characterize the rapidly evolving situation. Deaths during the 2003 war are compared in some detail to the magnitude and distribution of deaths in the 1991 war. The highlighted differences are used to point out unique aspects of the current situation.

The national pre-war MoH systems for the collection of health information came to a halt. Routine surveillance activities continued in some governorates but in most a national system of weekly sentinel surveillance has been established in its place. The new system has 120 data collectors, 25 supervisors and 15 support staff across all 82 health districts (WHO). The criteria for determining inclusion of health events in the system are gauged by severity, outbreak potential, higher-risk in crisis, epidemiological situation, community concern, preventability of the event, and availability and feasibility of action.

Sentinel sites report to the Directorate of Preventive Medicine Directorate and the WHO Office in Baghdad. These reports are used for the on-going assessment of, among other communicable diseases, cholera in South Iraq.

Assessments of emergent institutional needs began as battles ended. WHO has 32 three-person teams doing assessments. As of 30 June 2003 they had visited 569 of the country's health facilities, including 35 of Baghdad's hospitals. A further 1,000 of some 1,500 primary health facilities and 100 hospitals were assessed by one or more of 18 other organizations (WHO and RHCO). Some facilities have been visited on more than a dozen occasions, while few visits have been made to seven remote governorates. WHO and the Coalition Provisional Authority (CPA) are attempting to collect and standardize the summarization of information from these various assessments, an exercise not unlike herding cats.

Other assessments used include a WHO/MoH study on the capacity of Kimadia pharmaceutical stocks and warehouse system, a UNICEF/NRI nutrition status survey, UNICEF/MoH assessment of cold chain infrastructure, an FAO food safety study, and WFP studies on poverty and Marsh Arab living status.

Comparison of Morbidity and Mortality in 1991 and 2003 Wars

The potential humanitarian consequences of the 2003 war were widely discussed in the months prior to March. Research reports claimed that thousands or even millions of people might starve, be killed, become victims of weapons of mass destruction, or become refugees. Many of these projections were based on a misunderstanding of the nature of the crisis in Iraq (44), (45) and (47). De-development/Under-development had been severe in the 1990s, but the country still retained or had acquired essential resources and capacities to enhance survival conditions in a short, intense military campaign.

War and war-related violence are a growing part of overall morbidity and mortality around the world. Iraqis faced both greater threats and greater protections going into war in 2003 compared with 1991. See Table 11. Most people had fewer assets and less purchasing power to acquire key goods in 2003 compared to 1991 (69). Some 240,000 children undergoing nutritional rehabilitation, 140,000 pregnant women receiving supplemental feedings, 4,000 children in penal institutions or orphanages, and several disadvantaged groups of refugees or displaced people were considered especially vulnerable (45). Had programmes developed in the 1990s to address these groups functioned after the war, most of the potential deaths could have been averted.

Table 11: Iraqi Military Casualties in Wars

Health Status	Iraq-Iraq War	Gulf War 1991	Gulf War 2003*
Dead (plus reported civilian)	250,000 – 500,000	63,000 – 100,000 (2,300)	Over 4,000 (6,987)
Wounded (plus reported civilian)	300,000	40,000 – 78,000 (6,000)	N/A (5,163)
Missing in Action (MIAs)	N/A	N/A	5,500
Prisoners of War (POWs)	65,000 (59,830 returned to Iraq)	71,204	8,622 (over 7,900 released)

Note: Estimates of casualties in the Northern Governorates due to conflicts range from 36,000 to over 37,000 killed.

*Data through 28 August. Sources: www.iraqbodycount.org/, www.defenselink.mil/ and www.centcom.mil

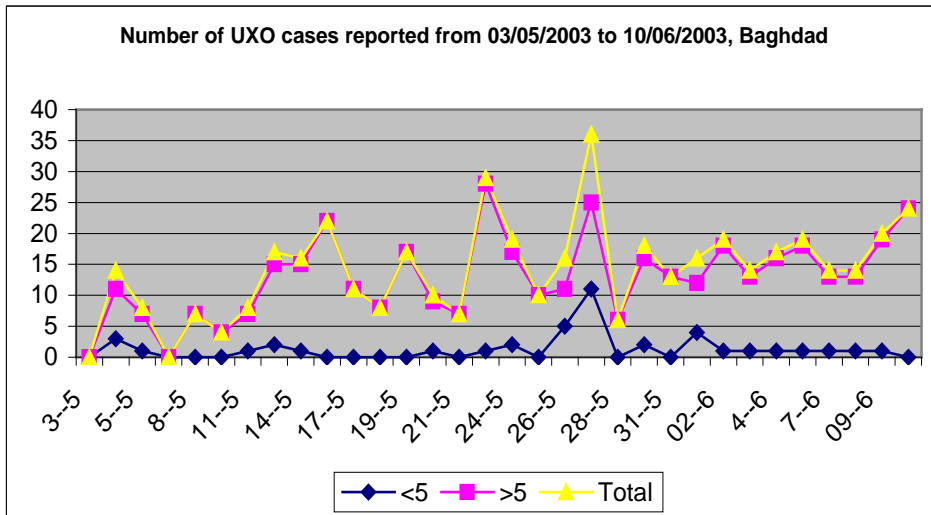
Heavy bombardment in the 1991 war resulted in an estimated 3,500 civilian and 56,000 military deaths among Iraqis (76). In 2003 a far more extensive field of battle is associated with an estimated death toll among civilians of about 6,000 up to 1 May, when hostilities were declared 'substantially over' (77).

In 1991, there were an estimated 14,000 deaths among Internally Displaced Population (IDPs), mainly among the half a million Kurds in the inhospitable northern border region. In 1999 there were some 500,000 displaced people in the North and 80,000 in the Centre/South. There were far fewer IDPs and refugees in the 2003 war, but the situation changed rapidly. Displaced people declined rapidly in the North following the 2003 war, while the numbers and types of displaced in the Centre/South grew. Deaths among them have not yet been estimated.

Far more deaths in 1991 were caused from two other types of risks after formal hostilities ended. Internal fighting among insurgents and vengeance attacks claimed about 35,000 lives in the two months following the 1991 war (76). Confusion, looting, criminality, and attacks on Coalition Forces grew in the months following the 2003 war but caused only about 300 casualties through 30 June (77). The number of deaths caused by this violence is not yet well accounted; only now are many hospitals collecting and summarizing data for the war period. A preliminary accounting of 6 sites from Baghdad showed that about 6% of all recorded deaths were a direct result of war actions.

Reports from major hospitals in Centre/South Iraq suggest that the number of shooting victims is many times higher than before the war. In all of 2002, there were approximately 300 mine and unexploded ordinance (UXO)-related casualties in northern Iraq (58). The number of casualties resulting from mine and UXO-related incidents is much higher, particularly around Kirkuk and Mosul. Approximately 250 new casualties from mid-April to mid-May were reported in the relatively peaceful Tameem governorate alone. Injuries from UXO greatly increased in the post-war period. See Figure 13. Hospitals report a rapid increase in the number of burn patients. This is mainly due to siphoning gasoline, domestic use of kerosene in place of electricity, or making improvised explosive weapons.

Figure 13



Source: (58)

The majority of post-war deaths in 1991 resulted from the destruction of essential goods and the loss of access to services among the civilian population. A doubling of mortality rates during this period among Iraq's population of 18 million for over eight months resulted in an estimated 111,000 excess deaths in 1991 (68). We do not yet have data on death rates following the 2003 war. The rise in malnutrition in Baghdad in the immediate post-war period and reports from clinicians of a rise in treatment of diarrhoea cases suggest a rise in mortality among under five year olds. It appears that the magnitude of that rise is far less than in 1991. Demographic surveys will be needed to specify the magnitude.

6.1. HEALTH AND NUTRITION STATUS

Three components of a surveillance system were in place at the end of the war. In the three northern governorates, the usual system of notifiable disease reporting remained operative. In most of C/S, weekly reporting was set up from sentinel hospitals and clinics to make up for the collapse of regular reporting. In most of Baghdad, it was possible to set up daily sentinel reporting.

Assessments presume that less than 50% of the Iraqi populations are able to access medical care owing to insecurity. Both health providers and patients alike, particularly pregnant women, children, and the chronically ill, are fearful of travelling to facilities (58).

MoH sentinel site reports following the war show a threefold increase in the proportion of all visits to health facilities due to diarrhoea compared to the same period of the prior year (WHO). It is not clear if this represents a rise in the number of serious diarrhoea cases as the total number of visits is reduced. Acute upper respiratory infections and diarrhoea constitute the most frequent current reasons for medical consultation. Typhoid fever, cholera, pertussis, measles, and visceral leishmaniasis cases have also been reported, but at what are considered to be within seasonally endemic levels (WHO).

The increase in the number of the reported cases of measles, whooping cough, mumps and diphtheria may indicate a failure in the vaccination coverage due to the interruption of EPI activities, although this has to be broken down by age to detect the time when this interruption had taken place (WHO).

Immediately after the war, during 29 April to 3 May 2003, UNICEF and NRI carried out a nutritional status survey among under five year olds in Baghdad. Such data is compared to the two previous representative samples studies on malnutrition in Baghdad. The data are not directly comparable, as some better-off children had left Baghdad during the war. Malnutrition levels were worse after the 2003 war than after the 1991 war. They were similar except for acute malnutrition, which was nearly double to levels in 1997. Given that malnutrition rates declined by about half in Iraq from 2000 to 2002, it can be assumed that 2003 data represents a short-term rise in malnutrition levels compared to pre-war rates. (See Table 12).

Table 12: Moderate and Severe Malnutrition in Baghdad

Malnutrition Type	Indicator	IST Study, 1991	FAO Study, 1997	April/May 2003
Underweight	Weight/Age	6.9	11.3	13.2
Stunting	Height/Age	12.2	15.7	15.9
Acute Malnutrition	Weight/Height	3.1	3.3	7.7

Source: (3), (21) and (42)

Assessments have revealed that seven out of ten children suffered from various degrees of diarrhoea. Contaminated drinking water is a major reason for diarrhoea. In addition, poor food hygiene has also contributed to children's diarrhoea as power cuts have disabled refrigerators and freezers at household level and cooking gas has become scarce. Food inspections came to a halt. Assessment reports from Karbala, Najaf and Basra governorates by coalition forces and NGOs revealed that more than 30% of the admitted cases to paediatric hospitals were suffering from moderate to severe malnutrition. Routine salt testing for iodine is ongoing and reports revealed that samples collected from the open market were found adequately iodised in 11 out of 19 Directorates of Health (DoH) areas.

There are reports that women have been victims of increased harassment and violence. One effect of these developments has been that women have had their access to health care constrained for both themselves and their children.

6.2. FACILITIES, PERSONNEL, AND ADMINISTRATION

UN Agencies, International Confederation Red Cross, Coalition Forces, governments of neighbouring countries, and dozens of NGOs mobilized resources to provide essential goods within the country or in neighbouring countries. This included:

- Training for district authorities on how to manage health issues in complex emergencies;
- 165 MTs of Therapeutic Milk (THM) and 3600 MTs of High Protein Biscuits (HPB) were distributed to 68 paediatric hospitals, 560 primary health centres (PHC) and 2,800 Community Childcare Units (CCCU);
- One million sachets of Oral Rehydration Solution (ORS) were distributed to PHCs in the Centre/South; another one million were pre-positioned in Kuwait. This was enough to cover all projected demand;

- Emergency health kits were positioned for up to 1.8 million children in the Centre/South and for 250,000 children in the North; and
- Safe birthing kits for up to 100,000 women inside Iraq and medical equipment and kits for 35 maternity wards were positioned in Iraq.

Communications networks were set up among NGOs, the UN agencies, and Coalition Forces. National staff from UN agencies worked in the country throughout the war and international staff was placed near the border. Humanitarian assessments began in permissive communities as soon as fighting ceased (58).

These preparedness activities, focusing on human as much as material resources, assisted in ensuring competent and timely action. They thus constitute a break with past models that focused almost entirely on supply rather than capacity development, and on basic household and primary care needs rather than specialized hospital needs.

Organization

An institutional vacuum followed the fall of the previous government in April. Looting and banditry then caused greater reductions in access to basic services than during the war. Insecurity remains the overriding obstacle to restoring services and improving health conditions. Less than half as many visits to health institutions are believed to occur now in the public systems of medical care. This is especially problematic for pregnant women and those in chronic disease programs for whom access to medical care is essential. Insecurity in many areas has resulted in harassment and violence against women, resulting in greater barriers to access of health services.

There is uncertainty over roles and decision-making at all levels within the health system. Hospital directors and other key functionaries have frequently been changed in workplace elections. Initially, about half of the hospitals in Baghdad were under the control of religious and political groups. These groups provided much needed security, operating funds, and administrative coordination. Medical authorities are generally uncomfortable with this politicisation of health services and have slowly reduced their influence.

The lack of clear direction extended to the leadership posts of the Coalition Provisional Authority (CPA). The first US appointed advisor to the MoH was replaced within 2 weeks of reaching Baghdad. The new appointee arrived more than a month later. Many of the early CPA staff were rotated rapidly, either because they were on loan from other agencies or because they were military officers. Universities were on their own for the first time due to the paralysis of the Ministry of Higher Education.

Facilities

Most MoH offices and about 3/4ths of the country's health facilities were initially reported damaged and looted (WHO) (58). More recent assessments suggest that looting has not been as widespread or damaging as first reported. About 12% of hospitals were damaged and 7% were looted. Equipment for communication and coordination within the DoH was lost. Particularly problematic were the loss of central level records, destruction of the country's two major communicable disease laboratories, and 4 of 7 central warehouses, and stocks of goods for

UNICEF and WHO. Health departments, hospitals and primary health centres lost furniture, air conditioners and refrigerators. Two of the three rehab hospitals in Baghdad were looted and are closed. Only about 15% of the CCCUs are closed. The Institute of Vaccines and Sera was extensively looted and suffered from long power outages, resulting in the loss of all stocks of vaccines. 31 military hospitals and their staffs, including about 12,000 nurses, were to be integrated into the public system of care.

Medicines and Medical Equipment

Six months' worth of medical supplies were in country in January 2003. Some Kimadia stocks were decentralized to regional warehouses and three months' requirements were delivered to all hospitals and health centres in anticipation of war-related breakdowns in communications and transport. Public clinics and private pharmacies received advanced distribution of drugs and medical supplies to cover a two-month period. The first and second rounds of national immunization days were conducted early, in January and February 2003, in light of expected subsequent difficulties. The search for children having failed to take part in prior measles campaign was also prioritised during these months.

Immunizations stopped at the beginning of the conflict. Disruptions to the electrical power supply compromised the cold chain and most vaccines at PHCs were lost. Vaccines are now either in country or in the pipeline in sufficient quantities to re-start the Expanded Program of Immunization (EPI) activities, targeting 4.2 million children under-five by mid-July. Only 60% of PHC centres have cold chain and security capacity to provide immunizations. (See Annex Table 6).

It is indicated that some 76% of hospitals and 70% of water pumping stations had back up generators in 2003 (UN). Specialized medicines for emergency care were not widely available and staff had little training in triage. The ICRC and some other agencies provided surgical supplies continuously throughout the war. While the safety net became tattered in some areas, no major communities were without emergency medical services and supplies for an extended period during or after the war. It was not known if Iraqi health professionals would continue to work during the war. In fact, at least half appear to have worked valiantly under very trying conditions and most returned to work as soon as fighting ended.

The supply chain for medicines was disrupted. Some 500 – 700 MTs of new medical imports began to arrive weekly over land from Jordan about six weeks after the end of the war. Management of Kimadia stocks and its distribution has always been problematic. Computerized and paper inventory management systems were partially destroyed in the war. Rehabilitation of the main Kimadia warehouse management and inventory systems has now begun, supported by 'spot-check' stocktaking (WHO).

The OFF pipeline for pharmaceuticals and medical supplies began again in June. Items in short supply in the immediate post-war period, including insulin, asthma inhalants, anaesthetics, and anti-hypertensives are now available, albeit in reduced quantities. There are still reported shortages in laboratory reagents, TB antibiotics, oxygen, and drugs for some chronic diseases. WHO reports that the \$160 million's worth of drugs in the OFF pipeline should cover most needs through till the spring of 2004.

6.3. POLICY AND FINANCE

Lack of central administration resulted in a lack of funds, or the authority to spend them, to meet recurrent costs following the war. Most health workers first received emergency payments eight weeks after Coalition Forces took Baghdad. MOH personnel and some others are still receiving their first payments from reconstructed employee lists of about 65,000 people. In early July a budget of \$211 was established for recurrent costs of the health system for the next six months.

User fees, a common feature of the health system for the last four years, were officially suspended when the new US MOH director assumed his post in June. This effectively reduced by 80% the income of doctors at public clinics and further disrupted the supply of oxygen and consumables. CPA administration quietly reversed this decision in July. Eight new PHC centres are known to have opened. There are probably many others not yet identified. Some are private and most have the sponsorship of religious organizations and domestic NGOs.

Efforts to improve chronic problems in the coordination of care between secondary and tertiary institutions are underway. These efforts are localized and spontaneous; national policy has not been set. Priority is being given to ensure supplies and equipment, provide for essential recurrent costs, and establish clinical care protocols. Some governorates are initiating efforts to standardize institutional practices and treatment protocols. Meanwhile, private medical practice has grown in importance where public services are lacking in all governorates.

The Ministry of Health and its staff have been resilient and organized enough to keep on serving people during very difficult times. The capacity of administrators and clinicians must be recognized and built upon when reforms to the health system are instituted. It was estimated that returning the curative health system to conditions prior to the 2003 war would cost \$52 million, and that returning it to its status in 1990 would cost \$264 million.

6.4. NUTRITION-FOCUSED POLICIES AND PROGRAMMES

Advanced food distribution prior to the war gave most households a four month buffer supply of rationed items. No major food shortages occurred prior to the reestablishment of rationed food distribution three months later in June. Distributions in that month exceeded the pre-war average of 350,000 MT by 12% (WFP). While some food agents were unable to distribute provisions due to insecurity, 30,000 additional beneficiaries (6% of the area population) were included in the four southernmost governorates. These were predominantly people previously excluded: army deserters, unofficial married couples, political suspects and criminals.

About half of the CCCUs are able to distribute HPBs now and 47% of NRCs have adequate supplies. Until the entire nutritional rehabilitation system is functional again, UNICEF provides PHCs with High Protein Biscuits and Therapeutic Milk to assist children suffering from malnutrition.

7. Recommendations for Short and Medium Term Action

Short Term

A. Focus on Human Capacity Development More Than Equipment or Commodities

Among Health Professionals:

- Virtually all personnel at all levels of the health system are in need of training in management, collection and use of health related information, and evidence-based practice.
- MOH and university managers are in need of public health training. This can best be done as sandwich training, involving periods of classroom study and workplace application.
- Decentralize and thoroughly revise curriculum in the health science schools. Reform curricula in many schools toward population-based care, primary care, and teamwork. Greatly expand the training of nurses, especially in clinical specialties including emergency medicine, intensive care, community health, and rehabilitation medicine. Greatly expand the training of physicians in emergency medicine, health education and primary care specialties, as well as evidence-based practice.
- Develop student rotations that address local priorities and are coordinated in collaboration with district or sectoral offices of MOH. Develop modern information technology-based learning in all health science schools.
- Create faculties for the education of allied health staff. This should include training for cleaning staff and patient transport personnel in health promotion, triage, and safe practice.
- Prioritise the recruitment, training, and employment of female health workers especially among mid-level professions of nursing and allied health disciplines. Develop a strong community health-nursing program.
- Social science research on cultural and religious influences and attitudes on behaviour toward health care seeking and young child feeding practices should be encouraged. This can be done through universities in the process of strengthening their ability to do policy-relevant applied research.

Among the Public:

- Health education for behavioural change through schools, newspapers, religious institutions and leaders, television, and radio should be developed. Popular education and promotion should be developed in areas of personal hygiene, life skills for adolescents, immunization, breast-feeding, oral health, avoidance of early marriage and short birth intervals, pre and post-natal care, and nutrition.

- Strong social mobilization for exclusive breast feeding for the first six months, and education on the gradual introduction of complimentary feeding, while continuing breast feeding up to two years of age. The importance of infant and young child feeding is paramount as it can prevent and considerably reduce infant and child morbidity/mortality.
- To improve nutrition, there needs to be a strong focus on food security in addition to the provision of foodstuffs. There must be a focus on livelihoods and purchasing power to identify those in need of supplementation.

B. Create a Health Information System Able to Facilitate Good Decision Making

- Support for rebuilding the national epidemiological surveillance system will permit the precise estimation of the causes of mortality and morbidity as well as the underlying factors influencing them and their relative magnitude. A heavy political focus on real or imagined health risks (i.e. Depleted uranium or radioactive contamination) can reduce awareness of basic actions that can be taken to reduce death and disability such as reduction of smoking, hand washing, micronutrient access, breast feeding and good complimentary feeding practices.
- Continue to develop new information systems of MOH including traditional but historically underdeveloped components including notifiable diseases, the production of services, reasons for consultation and in-patient days and causes of death. Integrate the redeveloped reference laboratories and private medical facilities into the MOH information systems.
- Continue to elaborate information systems of MOH to include measures of organizational efficiency in the production of services and quality and appropriateness of care provided. The national vital events registration system must be re-established.
- The system of chronic disease registration and pharmacies should be maintained, and further developed, based on current recommendations for therapeutic practice. A national registry for non-communicable diseases and the monitoring of health-related behaviour related to smoking, diet, and exercise should be established.
- High levels of stunting and chronic malnutrition suggest that attention should be given to infant and young child feeding, as it is at this early age when malnutrition starts, when breast feeding is stopped and complimentary feeding begins. Micronutrient deficits are also important and there should be a strong focus on fortification and selective supplementation, especially if the system of rationing is to be reduced or eliminated eventually.

C. Focus on Improving Core Elements of the Medical Care System

- More than \$500 million in OFF allocations exist for the construction of new specialized medical facilities and over \$300 million was allocated to strengthen the production of local product goods. These allocation plans should be reviewed, revised, and implemented along the priorities of the newly reoriented health system.

- Emergency obstetric care should be upgraded at key facilities with equipment, drugs, training, and referral capacity.
- Military hospitals should be rapidly integrated into the existing system of public services.
- Expand the number of CCCUs to 4000 and provide training and incentives to volunteers.
- Assure access to micronutrient supplements and food product fortification.
- Goals to improve the provision of services should be measured against minimum international standards, not just recovery to the poor conditions that existed prior to the 2003 war. Management indicators and engineering norms are often poorly specified. In C/S, for example, PHCs have been rehabilitated several times but none have been built in years. Some PHC function almost as hospitals and with population growth and movement, it is time to build and equip basic PHCs to carry out primary care activities.
- Population growth and movement dictate a new assessment of PHC needs rather than further renovation of existing centres. This also depends on the elaboration of functional models for referral systems.

Medium Term

D. Strengthen Health System Organization

- In spite of many limitations, some core elements of the health system function well. It is important to identify successes to build policy toward systems reform. The strengths of the system include targeted programs (EPI, growth monitoring), fairly equitable distribution of medical resources, a sophisticated pyramidal structure for health administration, and mixed public and private funding arrangements to support salaries and recurrent costs.
- Policy development on privatisation is needed. The health system should focus its financial and organizational resources on a limited range of essential services with major impact on morbidity and mortality only. Other aspects of health care can best be provided by others if the monitoring and coordination functions of public authorities are strengthened.
- Users already pay the majority of costs of the health system. The elaboration of prepayment mechanisms can both strengthen service provision and improve equity among consumers.
- Within the context of expanding private sector opportunities, policy should be developed to provide safety net public services to those for whom purchasing power or insurance options are not developed.

- Questions of the design of the health system, the role of the private sector, human resources in the health sector, and reforming health services to deal more effectively with the major health needs of the people will require a thorough needs assessment. It should be done in stages, will require several months, and necessitate the presence of experts in finance, organization, information systems, and epidemiology. It should be both a technical, and a political process. The involvements of a broad group of stakeholders in a process of analysis, reflection, and dialogue will be needed for this process to be effective. This is entirely new since there is no precedent for such a process in Iraqi history.

E. Develop Legislative and Regulatory Projects

- Review and implement the 1994 legislation consistent with the International Code of Marketing Infant Formula.
- Develop a licensing procedure for nurses and strengthen professional associations of health workers. Form a national public health association and establish a national school of public health.
- Designation of essential public health components of the health system, with legal oversight, responsibility for provision, or coordination vested in the MOH and other governmental bodies.
- Establish a comprehensive food and nutrition policy and action plan that involves the food industry, imports, food labelling, and health promotion.

8. Areas for Further Needs Assessment

- A study of past and current public and private financing is needed. This should involve record review, interview with former officials, and user surveys. These could be carried out as facility exit and/or households surveys.
- As studies on geographic variations of disease burden were not permitted in previous years, there is a need to obtain and review population based research for preparation by region and/or governorates (i.e. MICS 1996 for comparison to MICS 2000).
- Elaborate a permanent system of monitoring of population status, including assessment of nutritional status, KAP regarding use of medical care services, young child nutrition, hygiene, and treatment of diarrhoea and ARI. Establish a system of monitoring birth weights. Monitoring should be longitudinal in nature, and cross-sectional surveys should only be carried out if they are part of an on-going plan for monitoring.
- Almost all of the limited information on health status now available is focused on young children or pregnant women. Population groups with little known needs must be studied. This includes children over age five, adolescents, older adults, internally displaced people, widows, female-headed households, street children and orphans, those with mental health needs, and those with disabilities.

- Expanded monitoring of access to micronutrients and human micronutrient status is needed, especially with regards to Vitamin A, iron, iodine, fluoride, etc.,.
- Establish a national system for monitoring environmental health status, including biological, chemical, and nuclear contaminants.
- Assessment of the current Status of the chronic disease card system.
- Status of the local drug and medical product industries and potential for development.
- Census of remaining major health-related Oil for Food assets and needs (including vehicles including ambulances, generators and forklifts/handling equipment, etc.).

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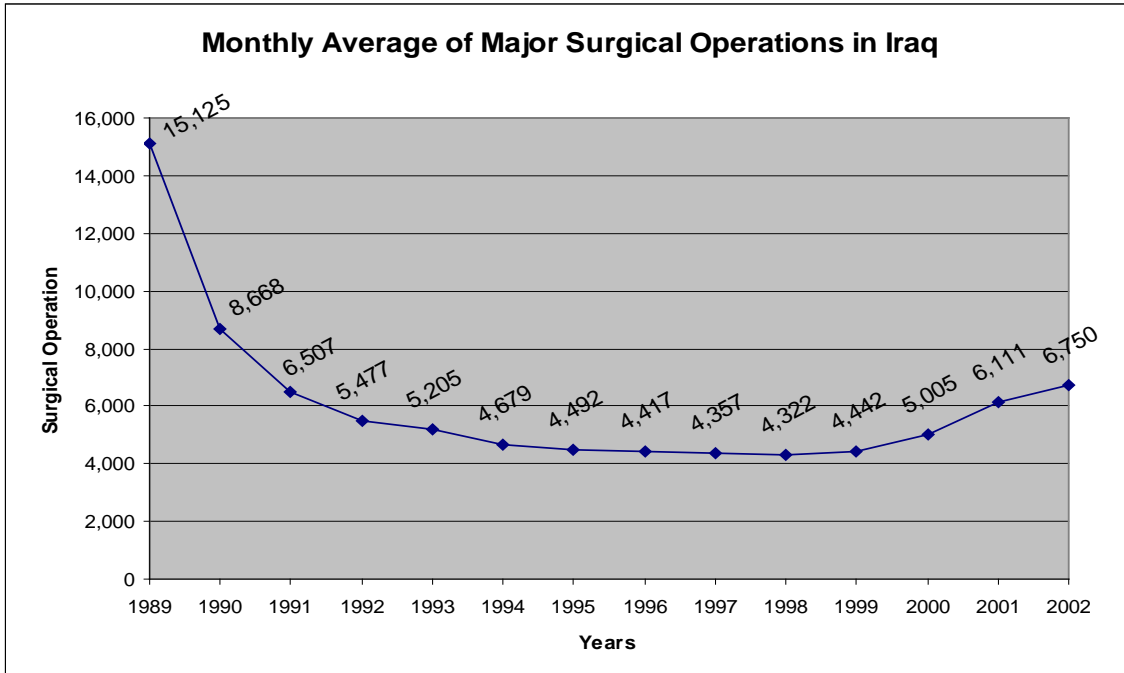
10.Acronyms

ACAI	Arab Company for Antibiotics Industries
ARI	Acute Respiratory Infections
BCG	Tuberculosis Vaccine
BMI	Body Mass Index
CCCU _s	Community Child Care Units
CDP	Chronic Disease Pharmacies
CAPD	Continuous Ambulatory Peritoneal Dialysis
CPA	Coalition Provisional Authority
CVD	Cardiovascular Disease
DPT	Diphtheria-Pertussis-Tetanus Vaccine
DoH	Directorate of Health
EPI	Expanded Programme of Immunizations
FAO	Food and Agriculture Organization
GoI	Government of Iraq
GCHS	Gulf Child Health Survey
GMU	Growth Monitoring Units
HC	Health Centre
HIC	Health Insurance Clinic
HPB	High Protein Biscuit
IDPs	Internally Displaced Population
IMR	Infant Mortality Rate
IST	International Study Team
Kimadia	State Company for Importation and Distribution of Drugs and Medical Supplies
MICS	Multiple Indicator Cluster Survey
MM	Maternal Mortality
MoH	Ministry of Health
MoT	Ministry of Trade
MTs	Metric Tons
NRCs	Nutrition Rehabilitation Centres
NGO	Non-Governmental Organization
NRI	Nutrition Research Institute
OFFP	Oil for Food Programme
OPV	Oral Poliovirus Vaccine
ORS	Oral Rehydration Solution
PHCs	Primary Health Centres
PC	Public Clinics
RHCO	Regional Humanitarian Coordination Office (Cyprus)
SDI	Samara Drugs Industries
SCR	Security Council Resolution
TBAs	Traditional Birth Attendants
TFC	Therapeutic Feeding Centres
TM	Therapeutic Milk
TNP	Targeted Nutrition Programme
TT	Tetanus Toxoid
TB	Tuberculosis
UN	United Nations

UNICEF	United Nations Children's Fund
UNOHCI	United Nations Office of the Humanitarian Coordinator for Iraq
UXO	Unexploded Ordinance
WFP	World Food Programme
WHO	World Health Organization

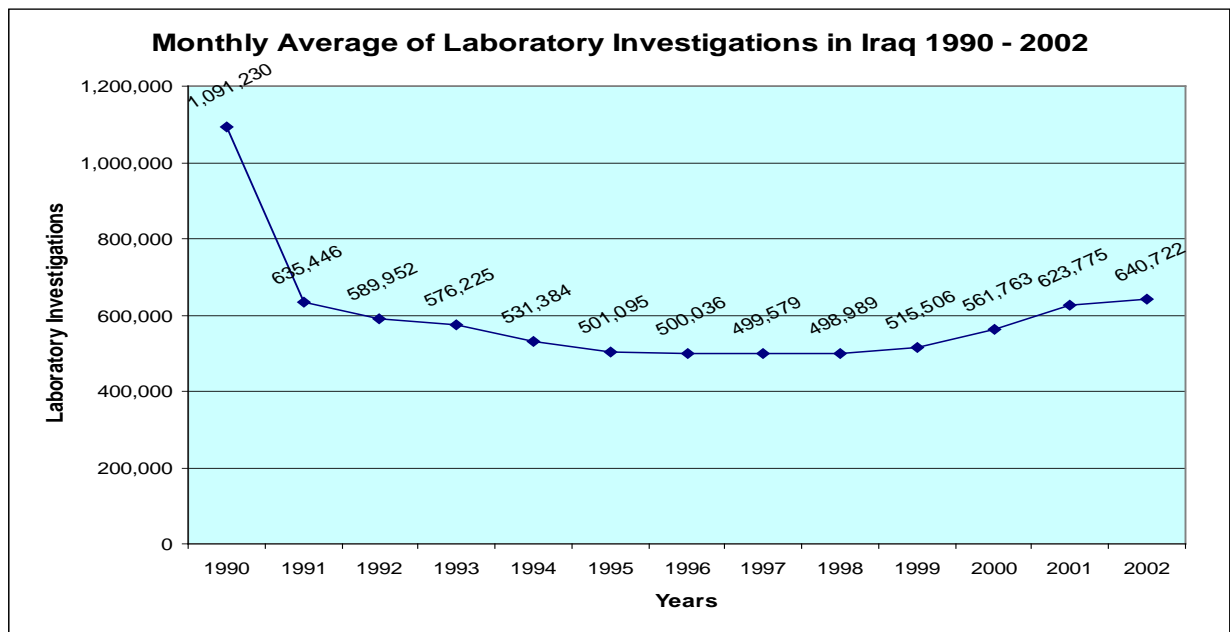
11. Annexes, Figures and Tables

Annex Figure 1



Source: MOH. After 1991, figures do not include the three Northern Governorates.

Annex Figure 2



Source: MOH. After 1991, figures do not include the three Northern Governorates.

Annex Figure 3

Monthly Average Number of Laboratory Tests, 1989 -2002

Year	Bio-chemistry	Bacteriology	Haematology	Blood Bank Tests	Serology	Cytology	Histopathology	Miscellaneous	Total
1989	350,266	84,022	431,736	184,444	95,321	29,605	16,362	338,293	1,494,050
1990	259,742	55,548	363,421	99,970	40,520	1,723	3,045	267,259	1,091,230
1991	134,762	26,368	211,410	67,634	23,411	573	1,725	169,562	635,446
1992	121,316	21,773	198,786	60,514	17,892	482	1,457	167,732	589,952
1993	118,323	21,272	194,113	59,204	16,646	388	1,341	164,939	576,225
1994	108,884	19,542	178,793	54,708	15,358	358	1,233	152,527	531,384
1995	100,595	18,093	168,572	51,677	14,227	332	1,145	146,454	501,095
1996	100,383	18,055	168,215	51,568	14,197	332	1,142	146,145	500,036
1997	99,748	18,008	166,644	51,148	14,236	330	1,023	148,232	499,369
1998	99,562	17,991	166,387	51,023	14,172	330	1,107	148,372	498,944
1999	101,469	18,525	173,651	53,078	14,609	327	1,135	152,711	515,506
2000	110,468	20,141	191,360	57,729	15,699	370	1,265	164,731	561,764
2001	121,677	24,569	212,377	64,096	18,259	460	1,480	180,640	623,558
2002	125,526	25,245	218,215	65,111	18,745	623	1,779	185,479	640,723

Source: MOH. After 1991, figures do not include the three Northern Governorates.

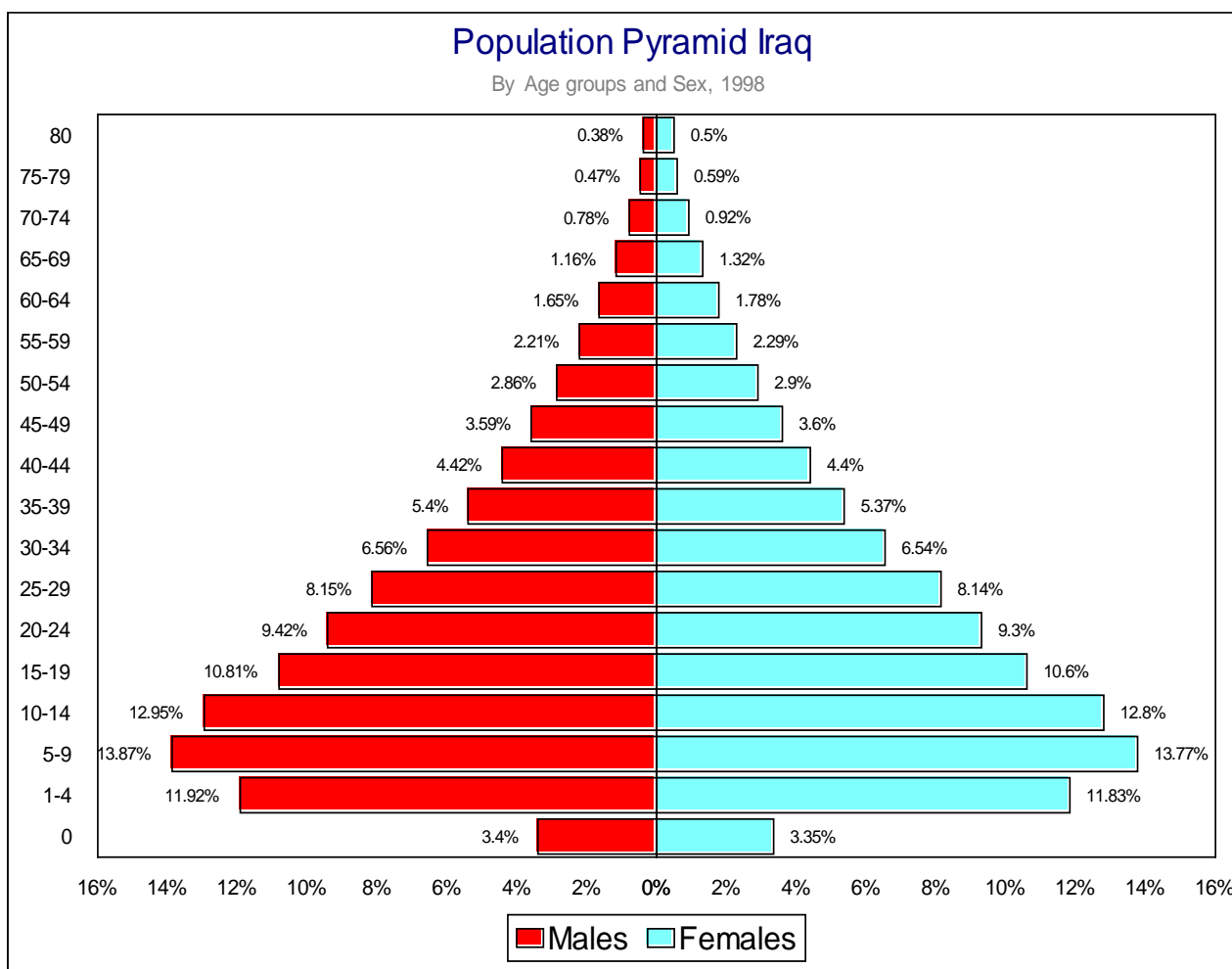
Annex Table 1: Facilities of the Ministry of Health in Iraq, 2003

Governorate	Ministry of Health & Directorates of Health	Health Sectors	Warehouses	Public Hospitals	Private Hospitals	Total Hospital Beds	Specialized Centres	Primary Health Centres with Doctors	Primary Health Centres without Doctors	Within Health Centres: Public Clinics	Health Insurance Clinics	Chronic Illness Pharmacy	Pharmacy for Rare Drugs	Research Institutions	Production Plants
Anbar	1	9	7	11	1	1,242	4	52	67	16	26	21	2	0	0
Babil	1	5	9	8	2	1,098	6	37	35	22	16	11	3	0	1
Baghdad	9	20	59	44	40	11,425	20	127	5	94	23	25	8	14	5
Basrah	1	10	8	14	3	3,142	7	64	8	30	37	13	2	0	0
Diyala	1	1	5	9	2	1,059	4	33	24	10	21	22	1	0	0
Karbala	1	-	4	5	0	663	5	22	4	15	9	12	1	0	0
Missan	1	1	5	7	1	869	5	20	11	12	13	17	1	0	0
Muthanna	1	3	5	4	0	826	4	29	1	12	16	11	1	0	0
Najaf	1	2	5	6	0	1,160	4	21	20	14	11	14	2	0	0
Ninewa	1	8	7	14	4	2,603	8	78	45	20	23	22	2	0	2
Qadissiya	1	7	4	8	2	878	6	29	21	17	18	15	1	0	0
Salah al-Din	1	9	6	9	0	812	3	44	33	14	30	20	3	0	1
Tameem	1	5	7	8	2	1,156	5	41	23	22	26	26	2	0	0
Thi-Qar	1	1	4	7	1	977	5	36	29	14	20	9	2	0	0
Wassit	1	5	4	9	1	773	4	29	8	12	19	16	1	0	1
Dahuk	1	-	2	7	12	977	3	48	32	2	20	45	0	0	0
Erbil	1	-	2	12		?	8	61	86	6	11		0	0	0
Sulaymaniyah	1	-	3	29		2,019	9	63	284	7	0		0	0	0
Totals	26	86	146	211	71	31,679	110	834	736	339	339	299	32	14	10

Source: Ministry of Health, WHO & UNOHC

Annex Table 2
Estimated Mid-Year Population of Iraq by Age and Sex, 1998

Age Group	Male	Female
0	377	359
1 - 4	1,322	1,267
5 - 9	1,538	1,475
10 - 14	1,436	1,371
15 - 19	1,198	1,135
20 - 24	1,044	996
25 - 29	904	872
30 - 34	727	700
35 - 39	599	575
40 - 44	490	471
45 - 49	398	385
50 - 54	317	310
55 - 59	245	245
60 - 64	183	191
65 - 69	129	141
70 - 74	86	98
75 - 79	52	63
80 +	42	54



Annex Table 3: Number of Reported Cases of 24 Communicable Diseases, 1989 - 20

Disease	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Amoebic Dysentery	19,615	32,957	58,311	61,939	62,864	76,864	668,064	543,295	329,950	264,290	609,920	643,251	652,314
Brucellosis	2,464	2,816	13,106	14,546	14,989	15,476	19,040	7,531	8,911	5,305	7,083	8,551	9,166
Cholera	-	-	1,217	976	825	1,345	1,216	831	486	2,560	2,398	757	560
Coetaneous Leishmaniasis	1,829	1,894	8,233	8,779	7,378	6,662	7,703	7,606	2,939	2,985	1,261	955	625
Diphtheria	96	168	511	369	239	132	119	258	290	160	142	34	32
German Measles	514	693	2,848	1,663	928	584	338	23	17	65	4,127	1,612	91
Giardiasis	73,416	113,222	501,391	596,356	602,011	587,924	689,113	584,621	605,170	509,050	535,140	542,365	563,642
Haemorrhagic Fever	38	42	196	65	48	39	48	48	11	2	2	4	4
Hydatidosis	370	406	1,787	1,991	2,108	2,520	2,908	184	257	345	440	521	752
Malaria	3,428	3,924	7,105	5,535	4,581	19,266	59,931	32,199	9,594	6,996	3,212	1,154	185
Measles	5,715	7,524	11,358	20,160	16,399	10,646	7,134	240	556	25,818	9,920	726	453
Meningitis	2,559	1,810	5,792	4,534	3,772	3,128	2,853	691	1,202	1,025	656	574	501
Mumps	9,639	15,963	22,718	23,883	46,961	39,642	29,195	14,817	49,556	35,881	25,554	18,720	2,780
Neonatal Tetanus	42	393	936	233	171	89	64	74	73	36	49	37	21
Pertussis	368	489	1,537	1,601	767	526	475	1,179	535	1,271	466	407	2,312
Poliomyelitis	10	56	186	120	75	53	32	20	31	29	75	4	-
Rabies	25	37	256	84	49	32	34	23	6	14	27	14	7
Scabies	-	198	1,892	7,956	10,354	13,832	18,209	39,146	40,360	43,580	35,343	23,217	21,512
Tetanus	32	87	933	98	64	38	31	12	25	26	19	17	21
Toxoplasmosis	372	512	2,223	2,745	3,145	3,899	4,640	2,768	2,960	2,036	3,506	3,834	3,959
Tuberculosis	14,350	14,735	13,527	12,355	19,005	19,581	26,882	29,196	26,607	29,410	29,897	25,251	11,413
Typhoid	1,812	2,240	17,524	19,276	22,688	24,436	26,634	15,238	14,464	19,825	23,392	24,614	21,356
Viral Hepatitis	1,816	3,228	11,135	13,766	16,801	11,296	15,557	29,803	18,501	12,142	13,150	8,879	10,605
Visceral Leishmaniasis	491	576	3,713	3,866	3,817	2,787	3,110	3,434	794	874	744	2,611	2,893

Source: MOH

Notes: After 1991, figures do not include the three Northern Governorates.
Diseases in Italic and shaded are Vaccine Preventable.

Annex Table 4

The Ten Most Commonly Diagnosed Cancers, by Sex, 1992-1994

Primary Site		Male		
		ICD (9)	No. of Cases	% of Total
1	Bronchus and Lung	(162)	2,246	16.5%
2	Urinary Bladder	(188)	1,770	13.0%
3	Larynx	(161)	1,087	8.0%
4	Non-Hodgkin's Lymphoma	(200 & 202)	854	6.3%
5	Leukaemia	(204 & 208)	824	6.1%
6	Skin	(173)	716	5.3%
7	Stomach	(151)	509	3.7%
8	Brain and Other CNS	(191 & 192)	475	3.5%
9	Prostate	(185)	443	3.3%
10	Hodgkin's Disease	(201)	406	3.0%
Other Sites			4,267	31.4%
All Sites			13,597	100.0%
Primary Site		Female		
		ICD (9)	No. of Cases	% of Total
1	Breast	(174)	2,813	25.1%
2	Leukaemia	(204 & 208)	615	5.5%
3	Non-Hodgkin's Lymphoma	(200 & 202)	610	5.5%
4	Skin	(173)	558	5.0%
5	Bronchus and Lung	(162)	535	4.8%
6	Urinary Bladder	(188)	520	4.6%
7	Ovary	(183)	426	3.8%
8	Brain and Other CNS	(191 & 192)	393	3.5%
9	Larynx	(161)	357	3.2%
10	Cervix Utero	(180)	333	3.0%
Other Sites			4,025	36.0%
All Sites			11,185	100.0%

Source: MOH. Note: From 1991 excludes 3 northern governorates.

Annex Table 5
Distribution of Nutritional Rehabilitation Centres (NRCs) and Community Child Care Units (CCCUs) in Iraq, 2003

Governorates	NRCs	CCCUs
Anbar	2	221
Babil	6	173
Baghdad	7	332
Basrah	7	292
Diyala	6	96
Karbala	2	105
Missan	6	127
Muthanna	3	97
Najaf	3	114
Ninewa	6	250
Qadissiya	4	74
Salah al-Din	6	88
Tameem	1	79
Thi-Qar	4	199
Wassit	4	136
Dahuk	4	91
Erbil	4	116
Suleimania	7	203
Totals	82	2793

Source: MOH and UNICEF

Annex Table 6
Status of Cold Chain Facilities in Post War Iraq, 2003

S/N	Description	Available Before War	Available After War: Working	Available After War: Damaged or Looted	Requirements
1.	Kerosene Refrigerators	684	343	228	438
2.	Electric Refrigerators	547	343	116	380
3.	Ice Lined Refrigerators	195	149	35	118
4.	Cold Rooms	35	17	13	21
5.	Vaccine Cold Boxes	1,207	989	70	402
6.	Vaccine Carriers	7,752	6,533	447	3,885
7.	Ice Packs	37,720	31,210	2,500	22,600
8.	Electric Generators	475	447	57	246
9.	Bimetal Thermometers	4,656	3,385	614	5,558
10.	Fuel for the Kerosene Refrigerators	131,675 lt/litres?	1,500 lt	0	546,600 lt
11.	Fuel for the Electric Refrigerators	4,928,500 lt	9,500 lt	0	1,789,300 lt

Source: UNICEF

**Annex Table 7: Medicine/Health Sector Revised Allocations in Millions of US\$
(Phases I – XIII) As of January 2003**

Phase	I	II	III	IV	V	VI **	VII	VIII **	IX **	X **	XI	XII **	XIII	Total
Medicine/Health Centre /South (59% Account) *	181	181	182	15	21	276	389	575	310	213	138	145	123	3,068
Medicine/Health Special Allocation Centre/South Rehabilitation-Construction of Medical Facilities	-	-	-	-	-	-	-	-	110	107	112	131	12	587
Medicine/Health Supplies North (13% Account) *	29	29	19	12	14	30	44	50	40	40	40	20	20	386
Medicine/Health Rehabilitation North (13% Account)	10	10	10	9	19	92	59	148	101	102	44	48	56	708
Total	220	220	210	173	238	398	492	772	561	462	334	344	326	4,750

Sources: DPs I – XIII/GOI/OIP

* Medical items for the entire country, which are procured in bulk by GOI.

** Modified allocations as per Letters from the permanent mission of Iraq to the UN.

Notes:

Please note that out of the above funding for the Medicine/Health Sector, Samara Drugs Industries (SDI) Arab Company for Antibiotics Industries was allocated:

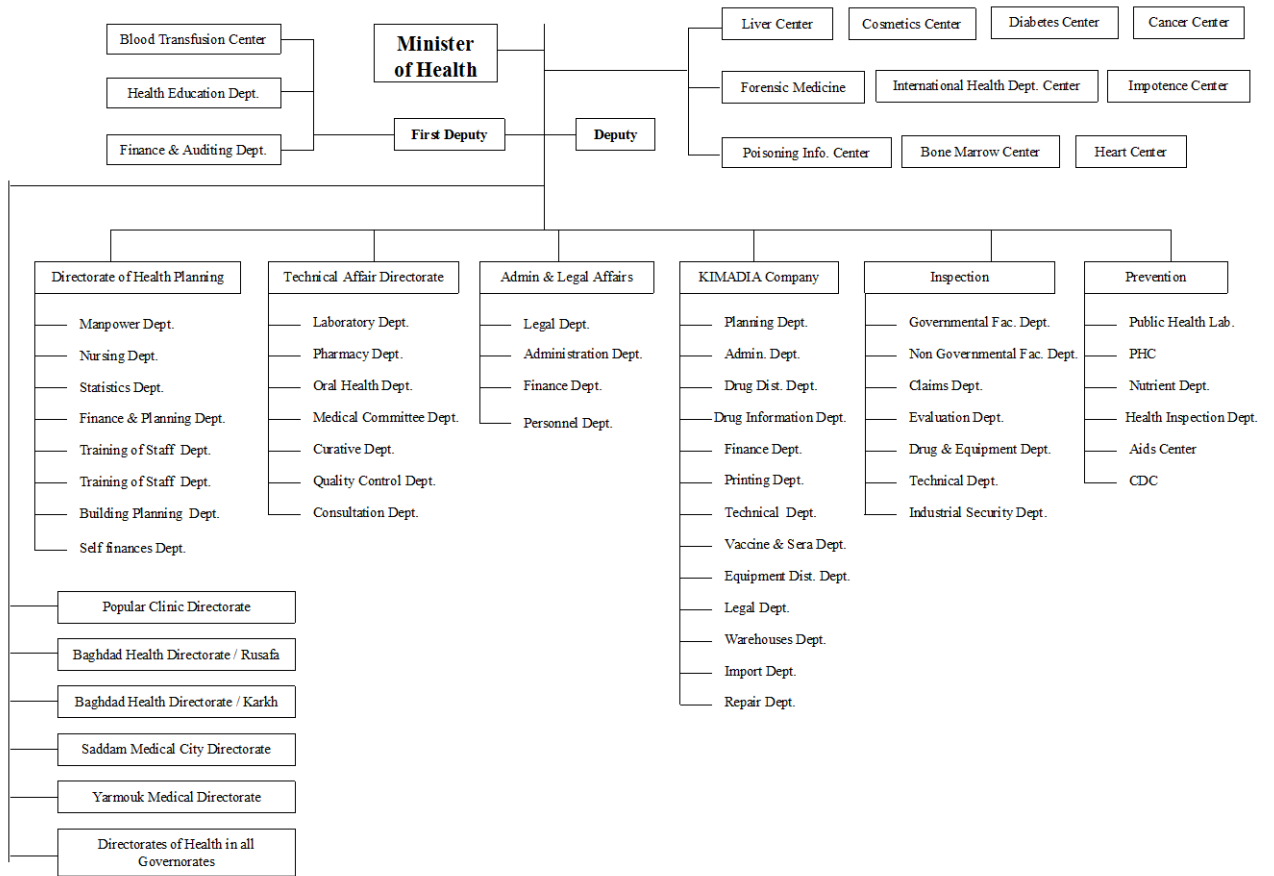
Sub-Total Distribution Plan (DP) Allocations for SDI in US\$ Millions: 300.75 (Final Phase IV: 9.75; Phase V: 20; Phase VI: 20; Phase VII: 20; Phase VIII: 40; Phase IX: 50; Phase X: 50; Phase XI: 45; and Phase XII: 46). In Phases XII & XIII, DP allocations for SDI are under the Industry Sector. Sub-Total DP VIII Allocation for Oxygen Production Plants: US\$ 58.33 million. Sub-Total DP Allocations for ACAI: US\$ 29.5 million (Phase IX: 20; Phase XI: 5 & Phase XII: 4.5).

Grand Total Allocated for Local Drug/Medical Item Production under Phases IV - XII: US\$ 388.58 million.

In Phase XIII, additional funding was allocated to SDI within funding for Ministry of Industry & Minerals.

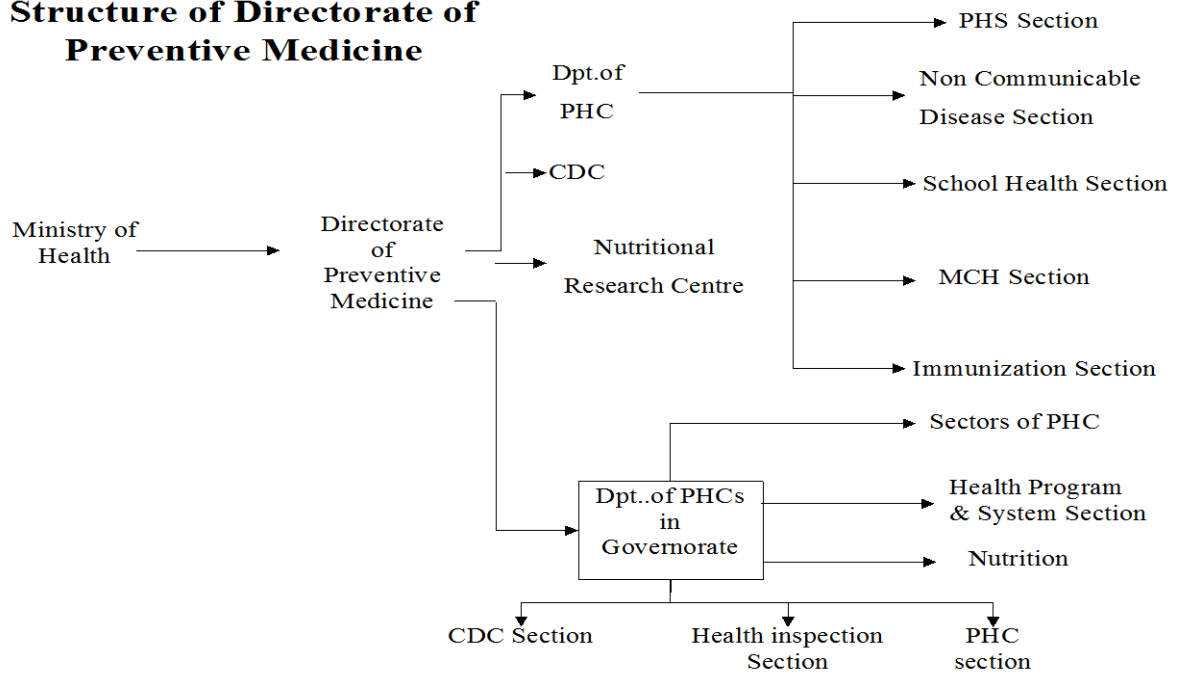
Annex Table 8:

MOH Structure



Annex Table 9:

Structure of Directorate of Preventive Medicine



**Annex Table 10:
Services Provided by Public Health Facilities in Iraq, 2003**

Type of Facility	Definition and/or Service Provided	Location	Cost	Working Hours	Additional Countrywide Information *
General and Specialized Hospitals	Hospitals provide preventive, primary, secondary and tertiary care.	Urban and rural areas	Nominal fee	8:00 - 14:00 (emergency departments are open 24 hr)	282 Hospitals (211 Public and 71 Private) and 110 Specialized Centres.
Health Centres (HC)	HC's provide preventive and primary health care	Urban and rural areas	Free	8:00 - 14:00	Health Centres are staffed with doctors or without doctors. Approximately 1,570 Health Centres in the country.
Public Clinics (PC)	PC's provide preventive, primary, secondary and tertiary care. PC's are staffed with doctors who have at least two years of experience.	Urban areas	Nominal fee	16:30 - 19:30	Health Centres in the morning often work as Public Clinics in the afternoon. Approximately 339 Public Clinics in the country.
Health Insurance Clinics (HIC)	HIC's provide the same services as PC's however, the difference is the staffing pattern and location. PC's are staffed with doctors who are new graduates and the clinics are located in rural areas.	Rural areas outside the city	Nominal fee	16:30 - 19:30	Approximately 339 Health Insurance Clinics in the country.
Chronic Illness Pharmacy (CIP)	CIP's provide drugs for treatment of chronic diseases on prescription issued by specialist and upon presentation of a special card for chronic illness.	Mainly in urban areas, usually attached to public clinics	Nominal fee	16:30 - 19:30	Approximately 299 Chronic Illness Pharmacies in the country.
Bilat Al Shuhada Pharmacies or Pharmacy for Rare Drugs	Bilat Al Shuhada Pharmacies are pharmacies for rare drugs. Patients can obtain rare drugs against prescriptions from medical specialists. Rare drugs are determined by Ministry of Health, based on availability and cost.	Usually attached to public clinics however, in some cases, they are free standing.	Nominal fee	16:30 - 19:30	Approximately 32 Bilat Al Shuhada Pharmacies in the country.

* All totals are preliminary and are subject to confirmed totals from this current review. This update is as of July 2003.

**Annex Table 11:
Demographic Indicators in Middle Eastern Countries**

COUNTRIES	Demographic Indicators									
	Total Popula-tion (Millions)	Popula-tion Growth Rate (avg. ann.)	Depen-dency Ratio (%)	Total Fertility Rate (births per woman)	Birth Rate (per 1,000 people)	Death Rate (per 1,000 people)	Life Expec-tancy at Birth (years)	Infant Mortality Rate (deaths per 1,000 live births)	Maternal Mortality Ratio** (deaths per 100,000)	Under 5 Mortality Rate (deaths per 1,000)
Year	2002	2000-05	2001	2002	2000-05	2002	2002	2002	1995 est.	2001
Algeria	31.3	1.6	6.6	2.8	22	5	70.7	38	150	49
Bahrain	0.7	2.0	5.1	2.3	21	4	73.3	7	38	16
Djibouti	0.7	1.8	7.6	5.2	36	20	43.5	99	520	143
Egypt, Arab Rep.	66.4	1.8	6.2	3.0	24	6	68.9	35	170	41
Iran, Islamic Rep.	65.5	1.5	6.0	2.5	22	6	69.3	35	130	42
Iraq	24.3	2.1	7.3	4.1	29	8	62.6*	83	370	117
Jordan	5.2	2.6	7.1	3.5	28	4	72.0	25	41	33
Kuwait	2.1	2.8	5.2	2.5	20	3	76.9	10	25	10
Lebanon	4.4	1.3	6.0	2.2	19	6	70.8	26	130	32
Morocco	2.9	1.6	5.8	2.8	21	6	68.4	39	390	44
Oman	2.5	2.4	8.0	4.0	26	3	74.1	12	120	13
Qatar	0.6	2.1	3.6	2.5	14	4	74.9	11	41	16
Saudi Arabia	22.1	3.3	7.8	5.3	32	4	73.1	21	23	28
Syrian Arab Republic	17.0	2.4	7.6	3.5	29	4	70.3	23	200	28
Tunisia	9.8	1.2	5.7	2.1	18	6	72.7	24	70	27
United Arab Emirates	3.0	2.4	4.0	3.0	17	4	75.4	8*	30	9
West Bank and Gaza	3.2	3.7	1.0	4.9	35	4	72.7	20	..	25
Yemen, Rep.	18.6	3.0	9.6	6.0	41	10	57.4	78	850	107
REGIONAL AVERAGE	<i>15.6</i>	<i>2.2</i>	<i>6.1</i>	<i>3.5</i>	<i>25</i>	<i>6</i>	<i>69.7</i>	<i>34</i>	<i>194</i>	<i>43</i>

Sources:

All figures unless otherwise indicated are from WDI data with most recent year available

* World bank Projections for years 2000- 05

** UNICEF Maternal Mortality Statistics

**Annex Table 12:
Health Resources in Middle East Countries**

COUNTRIES	Health Resources	
	Physicians per 1,000 pop.	Hospital beds per 1,000 pop.
<i>Year</i>	<i>ca 2002</i>	
Algeria	1.0	2.1
Bahrain	1.3	2.9
Djibouti	0.1	1.6
Egypt, Arab Rep.	1.6	2.1
Iran, Islamic Rep.	0.8	1.6
Iraq	0.5*	1.7*
Jordan	1.7	1.8
Kuwait	1.8	2.8
Lebanon	2.3	2.7
Morocco	0.4	1.1
Oman	1.3	2.2
Qatar	1.3	1.7
Saudi Arabia	1.7	2.3
Syrian Arab Republic	1.3	1.5
Tunisia	0.7	1.7
United Arab Emirates	1.9	2.6
West Bank and Gaza
Yemen, Rep.	0.2	0.6
REGIONAL AVERAGE	<i>1.2</i>	<i>2.0</i>

Sources:

All figures unless otherwise indicated are from WDI data, with most recent year available

* WHO, 2002

**Annex Table 13:
Health Expenditures in Middle Eastern Countries**

COUNTRIES	GDP per capita (Current \$US)	Total health expenditures (% GDP)	Public health expenditures (% of total health expenditures)	Health expenditures per capita (current \$US)
	<i>Year</i>	<i>2002</i>	<i>ca 2002</i>	<i>ca 2002</i>
Algeria	1,777	3.8	74	62
Bahrain	12,189**	5.2	71	430
Djibouti	909	7.0	60	56
Egypt, Arab Rep.	1,354	3.8	47	38
Iran, Islamic Rep.	1,641	5.8	41	96
Iraq	1,080*
Jordan	1,798	9.4	59	134
Kuwait	16,040**	4.3	84	630
Lebanon	3,894	12.4	18	499
Morocco	1,257	4.4	34	56
Oman	7,905	3.5	83	222
Qatar	28,132***	4.5	76	1,138
Saudi Arabia	8,711	5.7	81	352
Syrian Arab Republic	1,286	4.2	50	42
Tunisia	2,163	5.5	51	118
United Arab Emirates	17,063****	4.4	80	752
West Bank and Gaza	939	8.6	57	122
Yemen, Rep.	559	4.9	73	20
REGIONAL AVERAGES		5.7	61	113*****

Sources:

All figures unless otherwise indicated are from WDI data with most recent year available

* Iraq estimates are from the Iraq Intelligence Unit, 2003

** Year 2001

*** Year 2000

**** Year 1998

***** Excludes GCC countries, regional average with GCC countries is \$ 280