Medicine For Peace Report

Civilian Health in Iraq

Assessment of Public Hospitals in Baghdad

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Medicine for Peace (MFP) is a medical relief and humanitarian organization, founded in 1989, dedicated to assisting mothers and children who are victims of war. MFP has developed medical and mental health programs in a number of regions of armed conflict, including El Salvador, Iraq, Bosnia and Haiti. MFP's first medical team arrived in Iraq in June 1991 and over the following five years, MFP physicians and nurses performed health and nutrition assessments, established a pediatric clinic in a Baghdad hospital, delivered more than a million dollars in pediatric drugs to needy clinics, and took children with congenital heart disease and war related injuries to the United States for surgery. In 1996, the Baathist government expelled MFP from the country for statements concerning human rights violations in Iraq. MFP re-established its health programs in Iraq in 2003.

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Summary

The invasion of Iraq by Coalition Forces in March 2003, and the subsequent insurgency, has imposed enormous physical and emotional hardship on the Iraqi people. A Medicine for Peace (MFP) Study Team assessed the ability of the public hospitals in Baghdad to respond to this national crisis. Five general hospitals, seven specialized tertiary-care hospitals, and one specialized outpatient center were surveyed during October and November 2004. The assessment consisted of a structured interview with relevant hospital administrators, discussions with hospital staff, and validation of positive findings by direct observation.

Three of the surveyed hospitals suffered major bombing damage by Coalition Forces, and five hospitals were looted extensively and vandalized in March and April 2003. Most hospitals closed for weeks to months at that time, but have now reopened. Two facilities are operating at a markedly-reduced census level; the remaining hospitals are at, or above, capacity.

The MFP team finds a number of improvements in the hospital system since April 2003. The Team notes a significant increase in the number of hospital staff and a 30-fold increase in the salaries of doctors and nurses. The security situation at public hospitals is improved and all facilities are protected by the Force for Protection Services (FPS), armed guards trained and financed by the Iraqi government. All hospitals have addressed the unpredictability of electricity in Baghdad by installing gasoline-driven electrical power generators. Most significantly, since 1990, the battered health system has survived two wars, thirteen years of crippling sanctions, and a violent insurgency, yet remains operational.

Never-the-less, many aspects of the system function poorly, presenting an ongoing danger to the patients and staff, and demand immediate intervention. With great concern, The MFP Study Team notes the following:

- The majority of hospitals are generally unclean, unhygienic, and pose an imminent threat for hospital-acquired infections. Environmental surfaces are dirty; six hospitals lack disinfectants/detergents, gloves, masks and gowns, and eight hospitals have inadequate hand washing facilities (including hand washing stations, soap, and disinfectant). Of most importance, hospitals lack formal infection control programs and “best practices” standards to control hospital-acquired infection.

- Disposal of waste is a daunting problem for the majority of hospitals, and eight of the 13 facilities have no plan for disposal of hazardous (including infectious) waste. Health care waste is a reservoir of pathogenic organisms and puts patients, staff, and the community at risk.

- Lack of potable water and sanitation services has been problematic in Baghdad for more than a decade and is accentuated in the current hospital setting. Sixty percent of the toilets in hospitals do not work. A number of hospital floors do not have a single functioning toilet. Water is reported to be unsafe to drink in four facilities.

- All hospitals report either sporadic or persistent deficiencies of essential pharmaceuticals, including pain medicine. Specific essential disposable medical supplies, including sterile needles, i.v. tubing, cannulas, and --in hospitals with active surgical services-- sterile gloves, masks, antiseptics and soap, are in short supply in a number of hospitals

- Clinical laboratory equipment is generally old and malfunctioning. Seventy percent of the hospitals are unable to provide the necessary laboratory tests to support the clinical activities in the hospital.

- The deplorable state of facilities caring for woman and children (dirty, poor sanitation, inadequate laboratory and supporting services) is of great concern in light of the excessively high infant and maternal mortality rates in Iraq.

- Most medical and surgical sub-specialty services are available in the health care system in Baghdad, but a number have serious deficiencies. There are inadequate surgical support services (insufficient anesthesia, competent anesthetists, operating room nurses, and shortages of antibiotics for surgical procedures) in three of the hospitals with the busiest surgical services. Five institutions have marginal-to-inadequate radiological services, due to outdated and poorly-functioning clinical imaging equipment.

- The only psychiatric services available are in two old facilities that were extensively looted. The smaller psychiatric hospital has undergone repairs. The absence of acute psychiatric services, and consulting services in all hospitals surveyed, and the general lack of knowledge of psychiatric aspects of medical illness is a serious problem in a society that has endured years of political oppression, and suffers from high levels of poverty and violence.

- Many hospital staff feel isolated, and lack knowledge of principles of contemporary medical practice as a result of restrictions imposed by the Baathist government during the 1990s, the embargo of medical information by the UN sanctions, and the loss of an older generation of teachers.

- The abduction of physicians for ransom, and the targeting of prominent physicians for assassination have become major impediments to rebuilding a high quality health care system.

The Medicine For Peace Civilian Health in Iraq: Assessment of Public Hospitals in Baghdad recommends a number of critical interventions to address these issues (Recommendations**,** p.15).

On March 17, 2003, the UN formally withdrew all personnel from Iraq. The International Committee for the Red Cross (ICRC) and other NGOs subsequently, either downsized or completely terminated all relief activities in the country. Since that time, only sporadic reports from the Iraq Ministry of Health, the Coalition Provisional Authority, and anecdotal newspaper articles, comment about the state of the Iraqi health care system. This report is the first comprehensive assessment of public hospitals in Baghdad since the beginning of the occupation. This analysis was accomplished under difficult circumstances: free movement around Baghdad is impeded by random and continuing violence, and hospital staff and administrators are constrained by political factors making the release of health-related data very sensitive. Nevertheless, this assessment should provide the groundwork for developing immediate and long term interventions for a struggling hospital system. In this regard, the data will be of use to the Iraq Ministry of Health, and will help re-engage the international relief community in the continuing health crisis in Iraq.

Background

A number of reviews document the effects of the Gulf War and the UN sanctions on the economy, food availability and nutritional status, civil infrastructure, and health of the Iraqi people.[1-4] This section focuses on the weakened and vulnerable state of health facilities prior to the March 2003 war.

The health system before 1990. Prior to the Gulf War, Iraq possessed a well coordinated health system of primary, secondary and tertiary health care facilities that provided free medical care to 97% of the urban and 79% of the rural populations.[1] Efficient communication and movement existed within the network; patients were rapidly transported from one level to a higher level, if more specialized treatment was necessary. The system was managed centrally by the Iraqi Ministry of Health (MOH) whose budget in 1990 was $450M for a population of less than 20 million people. More than $500,000 was allocated to a central agency in the MOH, Kimadia, to purchase, store, and distribute pharmaceuticals, vaccines, and disposable medical supplies. The majority of drugs and medical supplies were imported from foreign markets. While the focus of the rapid expansion of health care facilities in Iraq during the 1980s was directed toward curative therapeutic interventions, malaria and tuberculosis prevention programs were initiated, and the MOH embarked on an expanded program of childhood immunization.

Key components of the Iraq infrastructure --the electrical power grid, the water distribution network, and the sanitation system, are an essential part of the health care system. In 1990, there were 20 electrical generating plants (steam, hydro, and gas) in Iraq

with a total capacity of 9,000 megawatts, with a reserve component of 40%.[5] The electrical grid powered an advanced water system that provided potable drinking water to 95% of the urban and 75% of the rural populations.[6] All sewage was treated before discharge into flowing rivers.

The Gulf War and the UN Sanctions (1990-2002). The Gulf War devastated the Iraqi health care system, a disaster from which Iraq has not yet recovered.[5, 7-9] The forty-three days of intensive aerial bombardment targeted the civilian infrastructure, particularly the electrical power grid, water purification and sanitation facilities, fuel storage depots, and communication centers. The acute crisis was amplified by the UN-imposed economic sanctions which were structured in way that denied Iraq foreign imports of pharmaceuticals, vaccines, and medical related supplies and equipment. In the face of the UN sanctions, rehabilitation of a health care system in disrepair was impossible.[1, 10, 11]

In June, 1991, Medicine For Peace medical teams began working in Baghdad pediatric hospitals. The following is a description of what they found:

"The hospital was in darkness. Ventilators, incubators, dialysis machines were not functioning and any patients dependent on these support systems had died. We made ward rounds with Iraqi physicians, many trained in the US and Great Britain, who were despondent and demoralized. No x-rays, lab tests, or possibility of surgery. Worse of all, intravenous fluids and supplemental feedings for the scores of malnourished children were in short supply, the pharmacy had exhausted its store of antibiotics for treatable infections, and there was not one vial of morphine to relieve the pain of children suffering with tumors on the cancer ward."[12]

The next decade saw some improvement in the functioning of the larger health facilities. Never-the-less the entire health care system continued to deteriorate due to increasingly ineffective Baathist Government policies, and the aggressive UN sanctions, promoted primarily by the US and UK. A number of relevant statistics illustrate the weakened state of the Iraqi health system, and the deteriorating condition of civilian health.[1, 4, 6]

- 869 of 1800 primary health care centers closed down between 1991-2000 because of lack of personnel, drugs, supplies and equipment.
- By 2002, the electrical power deficit had risen to 2300 megawatts, severely crippling the water and sanitation system, and impairing health facility function.
- Throughout the 1990s, 500,000 tons of raw sewage entered Iraqi rivers each day and resulted in an increase in water-borne infections.[13]
- Infant mortality, under-five mortality, maternal mortality, and acute and chronic malnutrition increased two to five-fold from 1990 to 2000. By 2002, 21% of Iraqi children had stunted growth or were chronically malnourished.[1]

The health crisis in Iraq, and the large number of excess childhood deaths (estimated to be 100,000-500,000 in the decade of the 1990s), were well documented by independent NGOs and UN agencies.[5, 7-9, 11, 14, 15] In an attempt to remedy the situation, in 1996 the UN Security Council initiated the Oil for Food (OFF) Program (UNSCR 986) which

allowed limited export of oil under UN control for purchase of food, medicine, and other approved items. Despite the numerous, well-publicized weaknesses of the OFF program, it provided an infusion of drugs into hospitals and clinics, and food into the national "food basket", but was of limited sustainable benefit.

March 2003 war and the post-war conflict. The bombing of Iraq by Coalition forces and the widespread looting and vandalism of public premises, particularly hospitals, and water and electrical facilities, wreaked havoc on an already marginalized system. The health-related facilities that were either destroyed or seriously damaged included: the Ministry of Health, twelve percent of the hospitals (with a higher number of Baghdad hospitals damaged), central public laboratories in Basra and Baghdad, the National Institute of Vaccines and Sera, four Kimadia warehouses, and sanitation and water facilities, including the Baghdad Water Works.[16] The inability of the US Department of Defense, and particularly the Office of Reconstruction and Humanitarian Assistance, to anticipate and deal effectively with the health crisis during and after the war is detailed in a recent publication.[17]

The MOH, working initially with the Civilian Provisional Authority (CPA), and now with the US Embassy and other international agencies, has taken up the challenge of reconstruction of the Iraqi health care system. The MOH presented a detailed health sector budget for fiscal year 2004 and long term-strategic plans. An overriding MOH priority is to develop a cost-effective, decentralized public health system with emphasis on primary care-centered health delivery, with the goal of significantly lowering infant and maternal mortality. The MOH budget was increased from $22M in 2002 to $900M in 2004, a substantial increase, but hardly sufficient to sustain reconstruction of the health system even using conservative estimates.[18]

As the violence in Iraq continues, little publicly-available data exists on the health of the Iraqi people or the functioning of civilian health facilities. Two recent reports indicate that the health crisis is more critical than generally acknowledged. A survey conducted in 2004 by the Iraqi Ministry of Health, in cooperation with the Norwegian FAFA Institute and the UN Development Program, reported a doubling of acute malnutrition rates in Baghdad children since March 2003.[19] Roberts et al[20] undertook a cluster sample survey throughout Iraq, and estimated that there were 100,000 excess civilian deaths since the 2003 invasion of Iraq.

METHODS

The Medicine For Peace Study of Baghdad public hospitals had three components:

- A structured interview with relevant hospital administrators during which a comprehensive questionnaire was completed.
- Meetings with staff physicians.
- Direct observation of positive findings.

Hospital administrators and physicians were interviewed by members of the Medicine For Peace Iraq Study Team (MFP Study Team). The Team consisted of Iraqi nationals

with extensive experience in medical relief work, and Dr. Michael Viola who directed the study. After the assessment form was completed, key findings were validated by direct observation e.g. cleanliness of the hospital, function of toilets, damage to infrastructure, etc.

Baghdad has thirty-three hospitals with a total bed capacity of 10,738 to serve 6.5 million residents.[4] Twelve public hospitals and one outpatient specialty center were assessed during October and November 2004. A diverse group of hospitals were selected with respect to size, general or specialty hospital, location in Baghdad, and whether the hospitals were teaching or non-teaching institutions. Multiple visits were necessary to collect adequate data from a number of hospitals. The thirteen facilities were from ten different locations in Baghdad and included five general, two pediatric, two psychiatric, three subspecialty (cardiac, surgical, obstetrical/pediatric) hospitals, and one outpatient specialty center (Table 1). The hospitals surveyed totaled approximately 5000 beds.

Security was a problem during the assessment period of this study. The MFP Study Team was unable to gain access to two additional hospitals originally planned to be surveyed because of armed fighting in the surrounding area. Another hospital refused to cooperate with the MFP Study Team for fear of reprisals.

The assessment instrument included information on the following hospital function areas:

- structural damage suffered during the conflict
- losses from looting
- state of security
- bed census
- medical, surgical and sub-specialty services offered
- staff numbers and salaries
- status of infrastructure (electricity, water, sanitation)
- hospital hygiene
- refrigeration
- communications and hospital vehicles
- laundry and sterilization capabilities
- clinical laboratories
- stocked pharmaceuticals and medical supplies
- recent civilian war injuries
- infection control practices
- staff education programs
- additional areas of concern to hospital administrators and staff

Pharmacy shelves were surveyed for drugs in eight essential categories: analgesics, antibiotics, antineoplastics, antipsychotic, cardiovascular, emergency medications (including ant-epileptics, anti-asthmatics, and insulin), nutrition (oral rehydration salts, dextrolyte, supplemental feeding), and vaccines.

The data was collated and analyzed by an Iraqi member of the MFP Study Team and Dr. Michael Viola. The report was critically reviewed before release by Marybeth Shea, University of Maryland, Les Roberts, Johns Hopkins School of Public Health, William Schaffner, Vanderbilt School of Medicine, Lewis Marshall, Howard School of Medicine, Cheryl Kennedy, New Jersey School of Medicine and Dentistry, Chris Hansen, and Harold Pachios.

FINDINGS AND DISCUSSION

A. Structural damage and security.

All of the hospitals surveyed were closed or operated at markedly-reduced function during the invasion and chaos of March and April 2003. Table 1. shows the damage inflicted by the bombing and looting. Three hospitals (Al Rashad Psychiatric, Medical City Surgical, and Yarmouk) suffered direct damage from bombing that necessitated closing of clinical units. Five hospitals were completely looted (Al Kindi, Ibn Nafis, Yarmouk, and the two psychiatric hospitals, Al Rashad and Ibn Rushd). The looting consisted of removal of beds, medical supplies, instruments and equipment, pharmaceuticals, water and sewage pipes, water purification systems, and patient records and hospital archives.

With the assistance of the International Committee for the Red Cross, foreign governments, and NGOs, critical equipment and supplies have been restored to many hospitals. Structural damage to buildings was repaired by a number of foreign governments including the US, Japan, Norway, Saudi Arabia, and others. All surveyed hospitals have reopened, and most hospitals are now operating at capacity, or above. Yarmouk Hospital, a large teaching hospital which sustained bombing and looting damage, had a capacity of 1000 beds, and now has a census of 270 patients.

During the invasion, the US forces released more than 1000 patients from the Al Rashad psychiatric facility, including 100 patients, diagnosed as criminally insane, i.e. convicted of violent crimes such as murder. The facility has slowly regained its patient population, although 300 patients have not been located.

At the present time, all hospitals surveyed are protected by government-sponsored armed units, the Force for Protection Services (FPS). However, the staff and administration from two hospitals that were extensively looted (al Kindi, Al Rashad), and two hospitals in the medical city district (Special Nursing, Special Surgical) are not confident that the FPS provides sufficient protection to resist the threat of violence to staff or repeated looting.

While steps have been taken to protect individual facilities, the general lack of security in Baghdad impacts on the function of every hospital. Random violence interferes with access to hospitals for patients and staff. Further, the revelation that physicians have been

targeted for abduction for ransom, and for assassination heightens hospital staff insecurity (see below).

B. Hospital staff.

The MFP Study Team notes an increase in the number of staff in all hospitals surveyed. Since 2002, the number of hospital-based physicians increased by 20% (range 2-75%). The number of nurses increased by 70% (3-120%). Records of total hospital staff were available for five hospitals, and showed a 62% increase (7-100%) since 2002.

Salaries for physicians and nurses have likewise increased from 2002 to 2004. In 12 hospitals, the average monthly salaries for physicians increased from $11 to $299. The monthly salaries for nurses increased from $6 to $181. The increase in staff salaries, although low even for the region, is an important morale builder, and now allows staff to buy essentials for their families.

The Study Team notes a qualitative change in the medical staff in the hospitals surveyed. A large proportion of the increase in the number of physicians is made up of doctors who worked in military hospitals that closed after the fall of the Baathist government. Also, there has been a loss of older, more experienced physicians, many of whom were trained in Europe and the US. A significant number fled the country during the period of UN sanctions, and prior to and after the March 2003 invasion.

The Study Team confirmed previous newspaper reports and statements from the Iraq Medical Association that a large number of Iraqi academics, including physicians, have been assassinated. A partial list of prominent physicians who have been murdered include: Dr. Samir Tahlan, oral surgeon, Dr. Bahir, plastic surgeon, Dr. Hamid al-Rawe, President of the Baghdad Medical Society, and Dr. Sarmad al Fahod, neurologist. Abductions and beating of physicians for ransom have included Dr.Abdul Hadi Al-Khalilli, head of neurosurgery at Baghdad University, Dr. Jawad Al-Sharkarchi, ophthalmologist, Dr. Walid Al-Khayyal, nephrologist, and many others. As a result, many physicians employ private armed guards to protect their offices.

C. Medical and surgical services in hospitals surveyed.

In this period of violence in the streets, providing acute medical services is a priority for the Ministry of Health and for most of the hospitals surveyed. Never-the-less, a number of general hospitals (Al Karama, Al Kindi, Al Nuaman, Yarmouk) offer a wide range of medical and surgical sub-specialty services (Table 2). Patients can obtain other diagnostic tests and treatment regimens by referral to specialized centers (e.g. Institute for Nuclear Medicine, Radiation Therapy Center). Yet, hospitals are deficient in providing services in a number of important areas of chronic disease care, including dialysis, adult and pediatric medical oncology, and radiation oncology.

A number of hospitals in Baghdad provide highly specialized surgical procedures, including the Neurosurgical Center, Ibn Haifam Ophthalmologic, Ibn Nafis Cardiac, Al

Aweya, Al Habi Bija and Al Khark Maternity Hospitals, and a number of pediatric hospitals including Children's Teaching Hospital and Child Welfare Hospital. There was little redundancy in the surgical services offered by the hospitals in Baghdad. The MFP team takes note of the effectiveness, under difficult circumstances, of the emergency rooms and trauma units in two hospitals (Yarmouk, Al Kindi), the burn unit at Al Karama and the cardiac and thoracic surgery services at Ibn Al Nafis.

However, the inadequate supporting services in three hospitals with busy operating room schedules (Ibn Nafis, Special Surgical, and Yarmouk) are of particular concern to the Study Team. All three hospitals have shortages of anesthesia, competent anesthetists and operating room nurses, and lack of critical pre-, peri- and post-operative antibiotics.

The problem of psychiatric services in Baghdad, and Iraq as a whole, deserves special mention. Clinical psychiatry is centered at two institutions: the old city asylum, Al Rashad, and a small hospital for acute patients, Ibn Rushd. Both buildings are old, worn structures that were extensively looted in April 2003. Ibn Rushd underwent considerable reconstruction. Both hospitals have small numbers of full-time staff, but do have active post-graduate training programs. The other hospitals surveyed neither have dedicated psychiatric beds nor psychiatric consultation services. The Team learned that the Medical City Hospital (not surveyed) has a few beds for acute psychiatric emergencies and there are a small number of understaffed community mental health clinics. The absence of psychiatric services in all hospitals (and clinics), the deficit of knowledge of psychiatric aspect of medical illness, and the lack of mental health leadership in the Ministry of Health should be addressed.

D. Infrastructure.

A summary of the state of the infrastructure of the hospitals surveyed is presented in Table 3.

Electricity. All of Iraq, including Baghdad, is plagued by shortages in electricity. During October 2004, some sections of the city received electrical power for only half the day. To deal with this problem, all hospitals surveyed had installed electrical power generators as auxiliary sources of power and had adequate stores of fuel on hand. Some sources estimate that gasoline-driven electric generators are able to provide only 60-70% of a single hospital's electrical needs as compared to public electricity.

Water. The public water in Baghdad is not safe to drink. Hospitals must develop and implement alternative water purification systems or obtain potable water elsewhere. Prior to the departure of UN Agencies in 2003, alternative stores of water were supplied to some hospitals by ICRC and UNICEF water supply tanks and water bladders. Filter systems were looted from a number of hospitals during the chaos after the invasion; some systems have been reinstalled through the largess of foreign governments.

The determination of water quality for the purposes of this study was by made by questioning administration and staff. The MFP Study Team did not sample water for coliform count or chlorine content. The Team learned that the Ministry of Health has not imposed periodic, mandatory, standardized water testing throughout the whole hospital system.

At the present time, the supply of potable water is inadequate, particularly in the hospitals in the medical city area: Children's Welfare Hospital (Monsour), Special Nursing Hospital, Special Surgical Hospital, Specialized Center for Endocrine Diseases and Diabetes. The Al Rashad Psychiatric Hospital is unable to provide safe water to a large inpatient population.

Sanitation. The number of functioning toilets, sewage backup, and smell of excrement throughout the hospital was assessed in each hospital by the Study Team. Sixty percent (range 30-90%) of the toilets in hospitals do not work. A number of hospital floors do not have a single functioning toilet. Multiple patients are forced to share toilets. Sewage has backed up onto the floor in the basement of one hospital. In eight hospitals surveyed, an unpleasant, nauseating smell of excrement is present throughout the hospital.

Waste disposal. There is no municipal trash or garbage collection and disposal service in Baghdad at present. Individuals, communities and facilities must arrange for their own trash disposal. This usually entails employing people with trucks to collect and dispose of trash in fields, where it is left or burnt, or at the large dump north of Baghdad (Oummaliyyah). The Team learned that there were approximately 800 trash collection trucks in Baghdad ten years ago; now there are approximately 80.

Only Ibn Rushd Hospital and the Special Surgical Hospital have developed a system of waste disposal; the remainder of the hospitals considers it a major problem facing their institutions. Eight of the 13 facilities surveyed have no plan for disposal of hazardous materials including infectious waste, pathological waste, pharmaceutical and chemical waste, sharps, radioactive waste and pressurized containers.

The MFP Study Team observed large piles of trash bags outside many of the hospitals, and used IV bags, syringes and needles in the streets adjacent to a number of hospitals.

Communication. Four hospitals have no means of communicating with parties outside of the hospital. The remainder have intermittent telephone service, but could only reach selected parts of the city. A number of hospital directors have cellular phones that are used for hospital business. The lack of an effective telephone/internet service, as part of a nationwide linkage system between the MOI and health facilities is a major impediment to the coordinated, centrally-directed rehabilitation of the health care delivery system.

Hospital vehicles. There is no significant change in the number of hospital vehicles and ambulances as compared to the period before the war. The hospitals surveyed average two ambulances per institution. One hospital (Special Nursing Hospital) recently

acquired three new ambulances. A number of hospitals reported theft or stripping of ambulances and vehicles in April 2003. These vehicles have been replaced.

Ambulances for acute, critical care are provided to each hospital by the government. The Baghdad central emergency ambulance dispatch center is in Karkh District. The MFP Study Team did not assess the center's effectiveness in responding to emergencies throughout the city.

E. Hygienic conditions in the hospitals (Table 4).

The MFP Team was dismayed by the general level of uncleanliness in the hospitals, even compared to the difficult period in the 1990s during the UN sanctions regime. The majority of administrators felt that lack of hygienic conditions in the hospitals was a major public health problem. Seven hospitals do not have the necessary personnel to clean the hospital daily. Six hospitals, including hospitals with major surgical services (Al Kindi, Special Surgical, and Yarmouk), do not have disinfectant solutions in stock. Seventy percent of the hospitals have insufficient staff and facilities to provide clean laundry to patients on a regular basis.

Half the hospitals are encountering difficulties maintaining a sufficient number of autoclaves to ensure surgical and medical supply sterility, and for the decontamination of infectious waste.

The Team is concerned that the staff in eight of 13 facilities is of the opinion that there is inadequate hand washing facilities to ensure the containment of infectious diseases.

The occurrence of specific communicable diseases is reported to the Ministry of Health. However, hospitals lack pro-active infection control programs and "best practice" standards to prevent hospital-acquired infections, or the spread of communicable diseases throughout the hospital.

F. Radiological services.

The majority of hospitals have minimally-acceptable instruments and personnel to perform standard x-ray examinations. Five hospitals have CT scanners; one of the instruments is in poor repair. Five institutions have marginal-to-inadequate radiological services. Children's Teaching Hospital (Ishkan) has only one x-ray machine, which is unacceptable for this critical pediatric center. The Ibn Nafis Hospital has no functioning CT or MRI, and only one ultrasound machine, a deficit that seriously impacts on the quality of cardiovascular surgery performed in that tertiary referral center. The Children's Welfare Teaching Hospital (Mansour) has only one standard x-ray machine: an outdated Shemazdo, 1976 model, and one portable x-ray machine dating from the early 1990s. There are no radiological capabilities at the large, Al Rashad psychiatric Hospital.

G. Clinical laboratories.

The fourteen years of UN sanctions had a devastating effect on instrumentation used to perform clinical laboratory tests. Spare parts and necessary reagents for laboratory instruments were impossible to obtain, and foreign service contracts for repair of instruments were not honored. As a result, clinical laboratory instruments in the hospitals surveyed are old, and many are non-functional. Most laboratory tests are done manually. Administrators in 70% of the hospitals surveyed felt they were unable to provide the necessary laboratory testing to support the clinical activities in the hospital (Table 5).

The majority of the hospitals surveyed do not perform serological assays for HIV, hepatitis B and C, or HIV viral load (HIV RNA) assays. These tests are available and performed at the Central Blood Bank Laboratory. The MFP Study Team intends to assess resources available, as well as the reliability and quality control measures in the central laboratory with respect to testing for HIV and other blood-transmissible diseases in a subsequent study.

Blood for patient transfusions in individual hospitals is supplied by the Baghdad Central Blood Bank. Blood donors, e.g. patient family members, are cross matched and donate blood at the central blood bank. The majority of the hospitals surveyed were satisfied with the access to blood from the Central Blood Bank. There are a number of problems in blood availability and delivery, including donors are required to deliver the blood to the hospital. This is a hazardous system in a city which abounds with theft and violence.

The Study Team is aware that the MOH has proposed a national infrastructure for blood screening, donation and processing, and supports that program being funded.

H. Pharmacy and medical supplies.

All hospitals support both in-patient and out-patient pharmacies. Five hospitals report insufficient refrigeration facilities to reliably store labile pharmaceuticals and biologics. Again, these are hospitals that sustained heavy damage in March 2003 (Al Rashad, Yarmouk) hospitals in the Medical City Area (Special Nursing, Special Surgery), and the Child Welfare Hospital at Monsour.

All hospitals report either sporadic or persistent deficiencies in essential drugs categories that impaired the hospital's ability to provide for optimum treatment of patients. Table 6 summarizes the specific deficiencies in each hospital.

Most hospitals have shortages of medical supplies, and generally need sterile needles, i.v. tubing, and cannulas, and in hospitals with active surgical services, sterile gloves, masks, antiseptics and soap.

I. Other hospital issues: staff education programs.

Hospitals administrators voice a variety of problems specific to their institution, e.g. lack of support services and staff in specific areas, necessity for structural repairs and reconstruction, access to more resources from the MOH, etc. Despite the many daunting

challenges facing hospital leadership in Baghdad, all stress the need for education programs for physicians, nurses and specialized support staff. Restrictions imposed by the Baathist government during the 1990's, the embargo of medical information by the UN Sanctions, and the loss of an older generation of teachers leave many hospital staff isolated and lacking knowledge of principles of contemporary medical practice.

Recommendations

Members of the Medicine For Peace Study Team are well acquainted with the evolution and structure of the Iraqi health care system. That system, a centrally-managed health care network of primary care and referral centers, remains in place and should be strengthened. In addition, the Study Team strongly endorses the long term strategy of programmatic emphasis on disease prevention at the community level, and strengthening the quality of primary care delivery.

Even within the context of a disease-prevention model, general and tertiary care hospitals are crucial. The public hospitals in Baghdad do not deliver a high standard of care at the present time. Many of the deficiencies are remediable and should be promptly addressed.

The Study Team notes considerable variability in facility upkeep, drug procurement, trash disposal, patient fees, etc. among the hospitals surveyed, often related to the managerial skills and influence of the hospital administration. The MOH should be empowered to assume primary responsibility for setting standards and performance measures on a hospital's ability to provide a safe environment and high quality patient care.

We propose the following specific recommendations:

1. The highest priority should be to improve the deplorable hygienic conditions in Iraqi hospitals and prevent the spread of hospital-acquired infections. To accomplish this, the Ministry of Health should be given the resources and assume responsibility to:

- Develop, implement and monitor a national program to support individual hospitals in reducing the risk of hospital-acquired infections, by establishing hospital-based infection control programs that comply with international standards.[20]
- Immediately provide resources so hospitals may obtain mops and cleaning implements, hospital grade-detergent/disinfectants, gloves, gowns, and masks. Also, provide more hand washing facilities, improved linen treatment and cleaning, functioning autoclaves, and personnel trained to clean health care facilities.
- Develop a national system and provide support to collect, handle, decontaminant, store and transport hospital waste, particularly hazardous waste, according to standard practice.

2. The lack of an adequate quantity of potable water in many hospitals, and the deplorable condition of the sanitation system in health facilities is a high risk situation that should be addressed by responsible parties (Government of Iraq, USAID, World Bank, Bechtel, etc.) immediately. Repair of this aspect of hospital infrastructure should not be delayed until the entire Baghdad water and sanitation system is reconstructed.

3. The MOH should allocate sufficient funds to replace aged and malfunctioning hospital equipment, particularly automated clinical laboratory instrumentation and clinical imaging instruments in order to support a reasonable level of patient care.

4. The acute shortage of drugs and medical supplies should be addressed by Kimadia. A revised national formulary, with a list of essential drug and disposable medical supplies, should be developed, and adequate support should be given for the equitable and continuous supply of these items to public hospitals.

5. In light of the high infant and maternal mortality rates, resources should be focused on facilities caring for mothers and children. In addition to public health programs in nutrition, vaccinations, peri-natal care, etc., secondary and tertiary hospitals providing pediatric and obstetric care will play an important role in reducing mortality rates.

6. The practice of psychiatry in Iraq should be modernized by establishment of a mental health division in the Ministry of Health, the promotion of psychiatric consultation services, mental health clinics, and education of health professionals on the psychiatric aspects of medical illness.

7. It is unlikely that the morale of medical staff, particularly physicians, will improve until there is a resolution of the violence and insecurity in the country. Nevertheless, efforts should be made to improve the isolation, both regionally and internationally, of physicians and nurses, and to institute professional education programs with the goal of upgrading the standard of care delivered in public hospitals.

References

1. The Situation of Children in Iraq, UNICEF, February, 2002.

2. Evaluation of food and nutrition situation in Iraq. Food and Agriculture Organization of the United Nations, 1995.

3. The health conditions of the population in Iraq since the Gulf Crisis. World Health Organization, March 1996.

4. Selected Health Information on Iraq, United Nations Humanitarian Coordination for Iraq, Health Coordinating Group, March 2003. (http://www.who.int/disasters/repo/10062.pdf)

5. The Harvard Study Team. The effect of the Gulf Crisis on the children of Iraq. N. Engl. J. Med. 315: 977-980, 1990.

6. Government of Iraq/UNICEF Program Review, 1990-2000; Sector review report for water and sanitation, 2000.

7. Ahtisaari, M., Report to the Secretary-General on the humanitarian needs in Kuwait and Iraq in the immediate post-war crisis environment. March 20, 1991.

8. Asherio, A., Chase, R., Cote, T., et al. Effect of the Gulf War on infant and child mortality in Iraq. N. Engl. J. Med. 327: 913-930, 1992.

9. International Study Team. Health and Welfare in Iraq after the Gulf Crisis: an in depth assessment. Center for Economic and Social Rights, New York. Sept.1991.

10. Global Policy Forum, Save the Children UK. Iraq sanctions: humanitarian implications and options for the future, 2002.

11. Garfield, R. Morbidity and mortality among Iraqi children from 1990- 1998. Assessing the impact of economic sanctions. Occasional Paper #3, Fourth Freedom Forum, Goshen, IN, 1999. (http://www.fourthfreedom.org/php/t-si-index.php).

12. Medicine For Peace Report. Health Crisis in Baghdad. June, 1991.

13. WHO. Communicable Disease Profile, Iraq. March 19, 2003.

14. Ali, M., Shah, I. Sanctions and childhood mortality in Iraq. Lancet 355:185-189, 2000.

15. Medicine For Peace Report. Nutritional study of children in the Hurriya district of Baghdad, 1993.

16. MedAct. Enduring effects of war. Health in Iraq. 2004. (www.medact.org)

17. Burkle, F., Noji, E. Health and politics in the 2003 war with Iraq: lessons learned. Lancet 364:1371-1375, 2004.

18. UN/World Bank Joint Iraq Needs Assessment, October 13,2003 (http://lnweb18.worldbank.org/mna/mena.nsf/Attachments/IA-HEALTH/$file/HEALTH+final+sector+report+16+october.pdf)

19. Roberts, L. Lafta, R., Garfield, R., Khudairi, J., Burnham, G. Mortality before and after the 2003 invasion of Iraq: cluster sample survey. Lancet 364: 1857-64, 2004.

20. WHO. Prevention of hospital-acquired infections. 2nd edition, 2002.

Table 1. Hospitals Surveyed and Present Security

Hospital	Location	Census	Bombing Damage	Looting Damage	Present Security	Comment
Al Karama	Sheik Maruf	400	none	major	2	General community, teaching hospital with active dialysis and burn unit. Former renal transplant center.
Al Kindi	Rusafa	280	none	major	1	Completely looted in April 2003, closed and reopened. Active general hospital that treats civilian war injuries from central and west Bagdad
Al Nuaman	Adhamiyah	250	minor	none	2	A General hospital with active emergency room.
Al Rashad	Shamnaezah	1250	major	major	1	Only hospital in Iraq providing long term care for psychiatric patients. Completely looted and patients released into community by occupying force. Has reopened.
Center for Endocrine and Diabetes	Medical City		none	none	2	A well-run subspecialty outpatient center.
Child Teaching Hospital	Ishkan	250	none	none	2	Premier pediatric teaching hospital in Baghdad.
Child Welfare Hospital	Mansour	220	none	minor	2	A tertiary pediatric center. Most patients suffer from chronic disease.
Ibn Al Biladi	Sadr City	240	none	none	2	Pediatric and maternity hospital in poor predominantly Shia'a section. Area of intense, continuing violence. Has active thalassemia unit.
Ibn Al Nafis	Nidal	200	none	major	2	A tertiary care center providing medical and surgical treatment of adults and children with cardiovascular diseases.
Ibn Rushd	Nidal	74	none	major	2	A general, acute care psychiatric hospital. Has active addiction unit. Hospital looted, closed and now reopened.
Special Nursing Hospital	Medical City	250	none	none	1	A general hospital in Medcical City where Sadam Hussein and family received care. Had excellent staff prior to war..
Special Surgical Hospital	Medical City	650	major	minor	1	One of three hospitals in complex comprising largest medical center in Baghdad.
Yarmouk	Qadisyayah	240	major	major	2	Extremely active general hospital; was 2nd largest in Baghdad before 2003 war (1200 beds). Bombed, looted, and partially reoppened. Treats many civilian war casualties.

Key: damage from bombing/looting: *none; minor:* function of facility minimally affected*; major:* facility partially or non-operatonal.Security: *0*:no government security; *1:* Forces for Protective Security(FPS) present, security problematic; *2:* FPS present, hospital secure

Table 2. Current Medical, Obstetrical, Psychiatric and Surgical Services

Hospital	ER	ICU	RT	Peds	Nurs	Inc	Obs	Psyc	Dialy	Gen Surg	Trauma	Burn	Neuro	Card	ENT	Opth	Onc	PedSur
Al Karama	yes	yes	no	no	yes	no	yes	no	no	yes	yes	yes	no	no	yes	yes	no	no
Al Kindi	yes	yes	no	no	no	no	no	no	yes	yes	yes	no	no	no	yes	yes	no	no
Al Nuaman	yes	yes	no	yes	yes	yes	yes	no	no	yes	yes	no	no	no	yes	yes	yes	no
Al Rashad	no	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no	no	no	no
Center for Endocrine and Diabetes	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no	no	no	no	no
Child Teaching Hospital	yes	yes	no	yes	yes	yes	no	no	no	yes	yes	yes	no	yes	no	no	yes	yes
Child Welfare Hospital	yes	yes	no	yes	yes	yes	no	no	no	no	no	no	no	no	no	no	yes	yes
Ibn Al Biladi	yes	no	no	yes	yes	yes	yes	no	no	no	no	no	no	no	no	no	no	yes
Ibn Al Nafis	yes	yes	no	no	no	yes	no	no	no	yes	no	no	no	yes	no	no	yes	yes
Ibn Rushd	no	no	no	yes	no	no	no	yes	no	no	no	no	no	no	no	no	no	no
Special Nursing Hospital	no	yes	yes	yes	yes	yes	yes	no	no	yes	no	no	yes	no	yes	yes	no	yes
Special Surgical Hospital	no	no	no	no	yes	yes	no	no	yes	yes	yes	no	no	no	yes	yes	no	no
Yarmouk	yes	yes	no	no	yes	no	yes	no	yes	yes	yes	no	no	no	yes	yes	no	no

ER: emergency room, **ICU:** intensive care unit, **RT**: radiotherapy, **Peds**: pediatric, **Nurs**: nursery, **Inc**: incubators, **Ob**: Obstetrics, **Psyc**: psychiatry, **Dialy:** dialysis, **Gen Surg**: general surgery, **Neuro**: neurosurgery, **Card**: cardiac surgery, **ENT**: otolaryngology, **Opth**: ophthalmology, **Onc**: oncolologic surgery, **PedSur:** pediatric surgery

Key: *yes* = services currently available; *no* = services currently unavailable

Table 3. Hospital Infrastructure

Hospital	Electrical Generator	Water Quantity	Water Potable	Functioning Toilets	Excrement Smell	Waste Disposal: Trash	Waste Disposal: Biological	Cold Chain
Al Karama	yes	yes	yes	35%	present	no	no	yes
Al Kindi	yes	yes	yes	30%	present	no	no	yes
Al Nuaman	yes	yes	yes	85%	absent	yes	no	yes
Al Rashad	yes	no	no	30%	present	no	no	no
Center for Endocrine and Diabetes	yes	no	no	80%	absent	yes	yes	yes
Child Teaching Hospital	yes	yes	no	60%	present	yes	no	yes
Child Welfare Hospital	yes	yes	no		present	yes	no	no
Ibn Al Biladi	yes	yes	yes	70%	absent	no	yes	yes
Ibn Al Nafis	yes	yes	yes	70%	present	yes	yes	yes
Ibn Rushd	yes	yes	yes	30%		yes	yes	yes
Special Nursing Hospital	yes	no	no	90%	absent	yes	no	no
Special Surgical Hospital	yes	yes	no	50%	present	yes	no	no
Yarmouk	yes	yes	yes	65%	present	yes	no	no

Key: hospital services: *yes*- service is adequate to meet hospital needs; *no*- service is inadequate to meet hospital needs. Functioning toilets: % of toilets in building able to flush. Excrement smell: *present:* fecal smell present throughout hospital; *absent:* fecal smell not detected.

Table 4. Hospital Hygiene

Hospital	Hospital clean	Times cleaned/day	Disinfectants available	Handwashing facilities	Laundry	Autoclaves
Al Karama	no	2	no	1	1	2
Al Kindi	no	3	no	1	1	2
Al Nuaman	yes	<1	yes	2	2	2
Al Rashad	no	<1	yes	1	1	1
Center for Endocrine and Diabetes	yes	1 to 2	yes	2	1	1
Child Teaching Hospital	no	<1	no	1	1	2
Child Welfare Hospital	no		no	1	1	1
Ibn Al Biladi	yes	2	yes	2	1	1
Ibn Al Nafis	yes	<1	yes	2	2	2
Ibn Rushd	yes	2	yes	2	2	2
Special Nursing Hospital	yes	1	yes	1	1	2
Special Surgical Hospital	no	1	no	1	1	1
Yarmouk	no	1	no	1	1	1

Key: Handwashing, laundry, autoclave facilities: *0:* not available; *1:* available but inadequate for hospital needs; 2: available and meets needs of hospital.

Table 5. Availability of Clinical Laboratory Tests and Blood Supply.

					Serology				*Cultures*	
Hospital	**Laboratories adequate**	**Automated blood counts**	**Automated chemistries**	**Blood Sugar**	**Typhoid**	**Cholera**	**HIV**	**Hepatitis B Virus**	**Bacterial**	**Viral**
Al Karama	no	no	yes	yes	yes	yes	yes	yes	yes	yes
Al Kindi	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
Al Nuaman	yes	yes	yes	yes	no	yes	yes	yes	yes	no
Al Rashad	no	no	no	yes	no	no	no	no	yes	no
Center for Endocrine/Diabetes	yes	yes	yes	yes	no	no	no	no	no	no
Child Teaching Hospital	no	yes	no	no	no	no	no	no	yes	no
Child Welfare Hospital	no	no	no	no	no	no	no	no	no	no
Ibn Al Biladi	yes	yes	yes	no	no	yes	no	no	yes	no
Ibn Al Nafis	no	no	no	yes	no	no	no	no	yes	no
Ibn Rushd	no	no	no	yes	no	no	no	no	no	no
Special Nursing	no	no	no	yes	yes	no	no	no	no	no
Special Surgical	no	no	yes	yes	yes	no	no	no	no	no
Yarmouk	no	no	yes	yes	yes	no	no	no	no	no

Key: Specific tests: *no*: currently not performed in hospital; *yes*: currently performed in hospital.

Table 6. Pharmaceuticals and Medical Supplies

Hospital	Drugs	Medical Supplies	Specific Deficiencies
Al Karama	1	1	Narcotics, anti-neoplastics, vaccines, i.v. fluids, sterile needles, I.V. tubing, anti-septics
Al Kindi	1	1	Narcotics, anti-neoplastics, vaccines, antibiotics (esp. parenteral), sterile needles, syringes, I.V. fluids, bandages, sterile gauzes, gloves, anti-septics
Al Nuaman	1	2	Intermittent deficiencies in numerous categories
Al Rashad	1	2	Analgesics, anesthesia for ect, antibiotics,anti-parasitics, psychotropics, anti-epileptics, cardiac and anti-hypertensives, sterile needles, I.V. tubing
Center for Endocrine and Diabetes	2	2	none
Child Teaching Hospital	0	2	Serious deficiencies in all categories
Child Welfare Hospital	0	2	Serious deficiencies in all categories
Ibn Al Biladi	1	2	Narcotics, anti-neoplastics, anti-epileptics, nitroglycerine, anti-hypertensives
Ibn Al Nafis	0	1	Serious deficiencies in all categories, anesthesia for ect, sterile needles, I.V. tubing, soap
Ibn Rushd	1	2	Serious deficiencies in all categories, sterile needles, face masks
Special Nursing Hospital	1	2	Narcotics, anti-neoplastics, vaccines
Special Surgical Hospital	0	1	Serious deficiencies in all essential categories (except antibiotics), sterile gloves, masks, soap
Yarmouk	0	1	Serious deficiencies in all essential categories (except antibiotics), sterile gloves, masks, soap

Key: Stores of pharmaceuticals and medical supplies: *0*: Continued lack of essential drugs and medical supplies seriously impacting on patient care; *1:* Intermittent lack of essential drugs or medical supplies; 2: Sufficient stores of essential drugs and medical supplies.