

RESEARCH PAPER

National perspective on in-hospital emergency units in Iraq

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ABSTRACT

Background: Hospitals play a crucial role in providing communities with essential medical care during times of disasters. The emergency department is the most vital component of hospitals' inpatient business. In Iraq, at present, there are many casualties that cause a burden of work and the need for structural assessment, equipment updating and evaluation of process.

Objective: To examine the current pragmatic functioning of the existing set-up of services of in-hospital emergency departments within some general hospitals in Baghdad and Mosul in order to establish a mechanism for future evaluation for the health services in our community.

Methods: A cross-sectional study was employed to evaluate the structure, process and function of six major hospitals with emergency units: four major hospitals in Baghdad and two in Mosul.

Results: The six surveyed emergency units are distinct units within general hospitals that serve (collectively) one quarter of the total population. More than one third of these units feature observation unit beds, laboratory services, imaging facilities, pharmacies with safe storage, and ambulatory entrance. Operation room was found only in one hospital's reception and waiting area. Consultation/track area, cubicles for infection control, and discrete tutorial rooms were not available. Patient assessment was performed (although without adequate privacy). The emergency specialist, family medicine specialist and interested general practitioner exist in one-third of the surveyed units. Psychiatrist, physiotherapists, occupational therapists, and social work links are not available. The shortage in medication, urgent vaccines and vital facilities is an obvious problem.

Conclusions: Our emergency unit's level and standards of care are underdeveloped. The inconsistent process and inappropriate environments need to be reconstructed. The lack of drugs, commodities, communication infrastructure, audit and training all require effective build up.

Keywords: emergency departments, emergency services, emergency units

INTRODUCTION

An emergency department (ED) is a medical treatment facility specialized in acute care of patients who present without prior appointment, either by their own means or by ambulance. The ED is usually found in a hospital or other primary health care center.⁽¹⁾ These are the most vital component of hospitals' inpatient business; they generate thirty to forty-five percent of hospital total admissions and revenue.⁽²⁾

Due to the unplanned nature of patient attendance, the department must provide initial treatment for a broad spectrum of illnesses and injuries even life-threatening events.⁽¹⁾ An appropriate environment is needed for patients, relatives and staff, where emergency patients are assessed, with clear operation policy on admission, discharge, length of stay and clinical support, including prompt clinical assessment and implementation of necessary test rapidly.⁽³⁾ Lack of effective EDs increases the risk that people will not receive care in a timely manner, and hence that they may die or become seriously disabled, adding to the suffering of patients and relatives.⁽⁴⁾

Fifty percent of all hospital admissions in USA come from this group, a marked change from the mid-1990s when the emergency department was a source of only a third of admissions. As the population increases and ages, the growth rate for emergency department visits and the resulting admissions will exceed historical trends creating a surge in demand for inpatient beds.⁽⁵⁾ The issue of emergency medical services had gained increasing importance in recent years due to the epidemiological transition to non-communicable diseases, and the increasing burden of injuries and violence worldwide and in the Mediterranean region.⁽⁴⁾

The objective of this study is to examine the current pragmatic functioning of the existing set-up of services of in-hospital emergency departments within

the main general hospitals in Baghdad and Mosul to explore the current strengths and weaknesses in order to set some practical recommendations for improving emergency medical services.

METHODS

Official approvals were gained from the health directorates of the two governorates; Baghdad (the Capital) and Mosul (the second largest city in Iraq). The study was conducted during the period from May through July 2012. Six major hospitals with emergency units were included in this study:

- Four major hospitals in Baghdad: Baghdad Teaching Hospital, Yarmouk Teaching Hospital, Abu-Ghraib Hospital, and Falluja Hospital.
- Two major hospitals in Mosul: Salam Hospital and Jomhori Hospital.

Almost all the surveyed hospitals are located on the main road (only one is on a residential street). The emergency units are working day round to provide emergency care especially for severe illnesses, emergency medical problems and accidents. The assessment tool has specified seven core assessment elements each with a list of actions aiming at achieving well-coordinated and ongoing essential in-hospital operations and services within a safe environment related to the emergency department. These elements are: geography (co-location and environment), input and output, staffing and supporting systems, process, equipment, secondary assistance services, and development (including training and audit).⁽³⁾ Within these elements are a number of essential activities and variables. The sources of evidence are based on direct observations and focused interviews with ED directors in addition to a special checklist that was borrowed from emergency assessment units⁽³⁾ and slightly modified to meet the general standards of the Iraqi hospitals.

RESULTS

There were no pediatric or obstetric units among the surveyed hospitals. Children and pregnant women who need the emergency services are sent immediately to the pediatric and obstetric hospitals.

The major functional units and secondary assistance services within the surveyed hospitals in the two governorates are displayed in [Table 1](#), which shows that 37.5% of these units have observation unit beds, laboratory services, imaging facilities, pharmacy with

Table 1. Major functional units and secondary assistance services of surveyed EDs.

Indicators	Yarmouk	Abu Ghraib	Falloja	Baghdad	Jomhori	Salam
Entrance/Reception	A	NA	A	A	A	NA
Waiting area	A	A	A	A	NA	NA
Acute Rx area	A	A	A	NA	NA	NA
Track area	A	NA	NA	A	NA	NA
Observation unit beds	A	NA	NA	A	A	A
Cubicles for inf. control	NA	NA	NA	NA	NA	NA
Operation room	NA	NA	NA	NA	A	NA
Lab. services	A	A	A	A	A	NA
Imaging facilities	A	A	A	A	A	A
Pharmacy with safe storage	A	A	A	A	A	A
Tutorial room	NA	NA	A	NA	A	NA
Administration unit	A	NA	NA	A	NA	A
Ambulatory entrance	NA	A	A	A	A	A
Parking areas	NA	A	A	A	NA	NA
Trolley and chairs	A	A	A	A	A	A
Single sex toilet	A	A	A	A	A	A
Staff rooms	NA	NA	NA	NA	A	NA
Provision of meals and drugs	NA	A	A	NA	NA	NA

A: available, NA: not available.

safe storage, and ambulatory entrance. Reception and waiting areas were not available in two hospitals. Consultation/track area, cubicles for infection control and discrete tutorial rooms are not available in almost all the surveyed EDs, while an operation room was found to work only in Jomhori Hospital. Trolley, chairs, and single sex toilets are available in all EDs. Provision of meals and drugs was available in one-third, and staff rooms were not available in any of the surveyed EDs.

Table 2 clarifies the input, output and work process analysis of the surveyed EDs. The annual number of patients received by these EDs is between 90,000 and 162,000. Manual medical reports (not electronic) with complete death registration as well as statistical checking were used in almost all the departments. Disaster drills and evaluation of patient safety events were seen in one-third of the units. Work process starting with description of patient flows, triage, documentation of vital signs, and written inter-facility transfer procedures, are practiced in about one-half of the units. Treatment, patient assessment and reassessment are performed, although with no adequate privacy, in all EDs. The time taken for a patient to receive the appropriate management is uneven according to the work load.

Table 3 indicates the staffing and supporting scheme of Iraqi EDs. Junior medical staff, senior nurse

leadership and interested nursing staff are available in approximately all units. Emergency specialists, family medicine specialists and interested general practitioners are present in one-third, and pharmacists in two-thirds of EDs. Primary care specialists, liaison psychiatrists, defined staff responsibilities, physiotherapists, occupational therapists, and social work links were not accessible in nearly all EDs. Clerical support and bed bureau present in half of the EDs.

Table 4 illustrates that bed number used for patient's observation is varying from few beds to 96 in Al-Jumhori teaching hospital. Lighting, electricity supply, air conditioning, ability to comply with fire and ambulance transportation (no helicopter or buses) are on hand. Sound control, patient call facilities, communication infrastructure contingency (e.g. walkie-talkies, ham radios, text messaging systems, etc.) does not exist in all units. The shortage in medication and urgent vaccines is a problem in all EDs, kit-monitors, pumps and blood gas machines are not available. Pulse oximetry monitoring was available with maintenance of sufficient supplies for 7 – 10 days and was seen in two-third of the EDs. Essential requirements are neither easily accessible, nor clearly labeled; the staff is educated on the location of all items with daily verification for proper location and function in half of the EDs.

Table 2. Input, output and process within surveyed emergency departments.

	Yarmouk	Abu Ghraib	Falloja	Baghdad	Jomhori	Salam
Indicators						
Clients/day	?	350 – 450	450 – 550	?	250	250
Medical records	A	A	A	A	A	A
Electronic medical records	NA	NA	NA	NA	NA	NA
Complete death registration	A	A	A	NA	A	A
Disaster drills	NA	NA	NA	NA	A	A
Statistical data	A	A	A	A	A	A
Evaluation of pt safety events	A	NA	NA	NA	A	NA
Process						
Description of pt flows	NA	NA	A	NA	A	NA
Triage	A	A	A	NA	NA	NA
Treatment	A	A	A	A	A	A
Documentation of vital signs	NA	A	A	A	Some	Some
Adequate privacy	NA	NA	NA	NA	NA	Some
Pt assessment and reassessment	A	A	A	A	A	A
Written inter-facility transfer procedures	Some	NA	NA	Some	NA	A
How soon a pt will be treated	Delay	Immediate	Delay	According to load	According to load	According to load

A: available, NA: not available.

There is no inspected developmental and training intentness in all surveyed EDs. No regular training for ED permanent staff, or weekly training sessions. Training of other hospital staff with training of staff

members every shift is done in two-thirds of the EDs, there is no weekly meeting of lead clinicians and managers, nor feedback by clinicians, team, external partners in all EDs (Table 5).

Table 3. Staffing and supporting system of surveyed emergency departments.

Indicators	Yarmouk	Abu Ghraib	Falloja	Baghdad	Jomhori	Salam
Leadership/EM or FM specialist	A	NA	NA	A	NA	NA
Junior medical staff	A	A	A	NA	A	A
Primary care specialist	NA	NA	NA	NA	NA	NA
Interested GP	NA	A	A	NA	NA	NA
Liaison psychiatry	NA	NA	A	NA	NA	NA
Senior nurse leadership	A	NA	A	A	A	A
Interested Nursing Staff	A	A	A	A	A	A
Defined staff responsibilities	NA	NA	A	NA	NA	NA
Pharmacists	A	NA	A	NA	A	A
Physiotherapists and occupational therapists	NA	NA	NA	A	NA	NA
Clerical support	A	A	NA	NA	NA	A
Social work links	NA	NA	NA	NA	NA	NA
Bed bureau	A	NA	NA	NA	A	A

A: available, NA: not available.

Table 4. Equipment and facilities of surveyed emergency departments.

Indicators	Yarmouk	Abu Ghraib	Fallosa	Baghdad	Jomhori	Salam
Number of beds	35	23	few	12	96	18
Lighting, electricity supply	A	A	A	A	A	A
Air conditioning	A	A	A	A	A	A
Sound control	NA	NA	NA	NA	NA	NA
Patient call facilities	NA	NA	NA	NA	NA	NA
Communication infrastructure	NA	NA	NA	NA	NA	NA
Transportation*	A	A	A	A	A	A
Ability to comply with fire	A	A	A	A	A	A
Availability of medicines, vaccines	Some	Some	Some	Some	Some	Some
Kit-monitors, pumps, blood gas machine	NA	NA	NA	NA	NA	NA
Pulse oximetry monitoring	A	A	A	NA	A	NA
Essential requirements are easily accessible, clearly labeled	NA	NA	NA	NA	NA	NA
Staff is educated on items' location	NA	A	A	NA	NA	A
Daily verification for proper location and function	NA	A	A	NA	NA	A
Maintenance of sufficient supplies (7 – 10days)	NA	A	A	NA	A	A

A: available, NA: not available.

*transportation between the emergency unit and other words of the hospital.

DISCUSSION

The availability of healthcare is essential to accommodate the surge in demand for providing care related to a public health emergency. Hospitals play a crucial role in providing communities with essential medical care during all types of disaster. Depending on their scope and nature, disasters can lead to a rapidly increasing service demand that can overwhelm the functional capacity and safety of hospitals and the health-care system at large.⁽⁶⁾

Conducting such assessment of in-hospital emergency departments within Iraqi governorates at this time must be considered, knowing that Iraq is one of the countries with a high rate of morbidity and mortality due to violent injuries. This will expose strengths to build on and the main gaps to be filled through future implementation of certain recommendations.

Many acute organizations have found that setting up an assessment for emergency units has greatly improved the care given to patients and helped to release the ED from a surfeit of patients waiting to be admitted or discharged.⁽³⁾

All emergency departments examined in this study are distinct units within the hospitals and are represented collectively as a department within each directorate

of health in each governorate.⁽⁴⁾ In Iraq, all emergency medical services are of minimal charge; available day round for patients who require immediate care; some patients are brought in by ambulance and others come in a separate entrance.

No protocols for management and clinical treatment have been developed yet for guiding the work in Iraqi EDs. None of the surveyed EDs display prominent signage, which should be in white text on a red background, including an arrow to indicate where patients should proceed. Some American states closely regulate the design and content of such signs, and require wording such as "Comprehensive Emergency Medical Service" and "Physician on Duty", to prevent persons in need of critical care from presenting to facilities that are not fully equipped and staffed.⁽⁷⁾

In the Syrian Arab Republic, the Ministry of Health is responsible for the provision of emergency services, which are free of charge. In addition, 40% of private hospital beds can be used by the Ministry of Health in the event of a large-scale emergency. Emergency centers are situated every 50 km along highways. The average response time is nine minutes inside cities and up to 15 min in rural areas. Each facility is obliged to have a plan, which is part of an overall national plan

Table 5. Development, training and audit in surveyed emergency departments.

	Yarmouk	Abu Ghraib	Falloja	Baghdad	Jomhori	Salam
Indicators						
Extended roles	NA	NA	NA	NA	NA	NA
Discharge co-ordination	NA	NA	NA	NA	NA	NA
Care facilitation	NA	NA	NA	NA	NA	NA
Out-reach	NA	NA	NA	NA	NA	NA
Call center	NA	NA	NA	NA	NA	NA
Training for						
E permanent staff	NA	NA	NA	NA	NA	NA
E teams of the day	NA	A	A	NA	Some	Some
Other hospital staff	NA	A	A	NA	A	A
Facility staff member every shift about the plan	A	A	A	NA	NA	A
Weekly training sessions	NA	NA	A	NA	NA	NA
Audit						
Weekly meeting of lead clinicians and managers	NA	NA	A	NA	Not weekly	NA
Feedback by clinicians, team, external partners	NA	NA	NA	NA	NA	NA

and is revised annually. Each governorate has its own disaster team. The Ministry of Health has developed job descriptions, policies and procedures and established a committee within the directorate for monitoring and performance evaluation and for receiving patients' complaints and comments.⁽⁴⁾

This study found that the fast track unit (unit for minor, non-life threatening conditions) is found in two of the surveyed EDs. This system allows for quicker treatment of patients who may otherwise be forced to wait for more pressing cases to resolve.⁽⁷⁾

Wood and Rhodes⁽⁸⁾ describe that it should be a dedicated unit, patients should undergo rapid and rigorous assessment, and investigations in order to establish their need for admission or discharge from the hospital. This reflects advice provided by, Alberti⁽³⁾ that the competence of the assessment unit is demonstrated by fast and accurate management of the patients presenting with suspected medical problems.

Many hospitals even have a separate area for evaluation of psychiatric problems. These are often staffed by psychiatrists and psychiatry-trained nurses and social workers. There is typically at least one room for people who are actively a risk to themselves or others. Suicidal emergencies are among other behavioral and psychiatric emergencies that provide the basis for emergency department visits.^(7,9)

There were no contented waiting areas within all the studied EDs. This is considered in comparison to the emergency department at the Hospital of Saint Raphael (USA), which treats over 55,000 people each year and contains a comfortable waiting area that makes the visit a more manageable experience.⁽¹⁰⁾

In Iraq, at present, there are a large number of casualties, which places a high burden on the service. In this study 90,000 – 162,000 yearly clients are seen by each of the six surveyed EDs affiliated with general hospitals within two large Iraqi governorates. Annually, outpatient visits in Iraq numbered 3,133,065 in 2003,⁽⁴⁾ while in USA there are 120 million visits to emergency departments each year, one for every three people.⁽¹¹⁾

The process of ED treatment usually starts with patient's arrival at the ED through multiple channels including walk-ins and ambulances. They are quickly assigned a medical record number and triaged by a nurse (prioritized and stabilized). After a patient is placed in a treatment bed, they are cared for by nurses and physicians—who may be specialized—according to level of urgency. Once emergency treatment is completed,⁽¹²⁾ the patients go through a discharge process, and their bed must be prepared for the next patient.⁽¹³⁾ Sometimes it is necessary to admit the patient to the hospital, where the patient

could be exposed to additional delays and processes.⁽¹²⁾

The current study revealed that the process of services started with the description of patient flows, which were available in three of the studied EDs. The flow of patients through any ED directly affects its quality of care, the safety and satisfaction of its patients, and its hospital revenue; it is critical that the flow be efficient.⁽¹³⁾

In our study, the triage, documentation of vital signs, and written inter-facility transfer procedures were done in about one-half of the surveyed units. Treatment, patient assessment and reassessment is performed, although with no adequate privacy except in Salam and Jomhori hospitals in Mosul, where there are few curtains separating patients (as opposed to small rooms with doors) undergoing examination. These curtains are accepted when designing treatment rooms in emergency departments for access patients on behalf of timeliness of physician assessment of urgent patients.⁽¹⁴⁾

At surveyed units, it is not always predictable how long the patients will have to wait to receive care. Patients are usually seen according to the seriousness of their medical condition. Critically ill patients are always seen first. Generally, other patients are seen in order of arrival. When the ED becomes over-crowded, staff tend to reprioritize patient needs, because there is neither time nor space, nor equipment to deal with the lower level needs.

Emergency department crowding has become a major barrier to receiving timely emergency care in the United States.⁽¹³⁾ The American college of emergency physicians defines ED overcrowding as a situation that outstrips available resources in the ED.⁽¹⁵⁾ Hospital ED crowding has led to increased patient waiting times. The average wait time was three hours in 2001, but now waiting times can exceed 24 h in some hospitals.⁽¹⁶⁾

The traditional solutions proposed for the crowding problem included a mixture of expanding capacity and increasing staff speed, which seems to be both cost-ineffective and risky in terms of omissions and errors. Thus, Seattle Children's Hospital has embraced the continuous performance improvement (CPI) philosophy, i.e., a cultural model of continuous incremental change to improve the quality, safety, delivery, and cost of care for their patients by engaging all staff in these efforts.⁽¹⁷⁾

Research shows that calm patients are more receptive to treatment, which in combination with technology can reduce waiting times, increase record accuracy, and result in a more efficient experience for doctors and patients alike.⁽¹⁸⁾

Mafraq Hospital, which is owned and operated by the Abu Dhabi Health Services Company and treats an average of 70 patients a day, or nearly 110,000 patients annually, realized that emergency care doesn't have to be an unpleasant experience. They designed their new facility with comfort and calmness in mind. As one of the leading trauma centers in the country, the Mafraq Hospital Emergency Department has been undergoing expansion which is expected to increase its capacity and position.⁽¹⁸⁾

A state-of-the-art electronic medical record system called Emergency Department Information Manager is currently in use at Christ Hospital (USA) and incorporates evidence-based clinical "best practice" guidelines to ensure the highest quality of clinical care. It also allows the ED staff to immediately access previous visits and quickly view previous treatments, test results and prescribed medications. Unfortunately, less than 20% of today's emergency departments use an electronic medical record, even as in Denmark, the ED clinicians experience positive effects of electronic whiteboards over dry-erase.⁽¹⁹⁾

This study found that there are still no emergency specialists as well as no regular development and training programs for the entire surveyed ED staff, with an overall shortage in emergency training of medical personnel and paramedics within the surveyed Iraqi EDs. In most cases, staff are not qualified in emergency.

While in other Arabic countries such as Morocco, there has been the launch of a qualification in emergency medicine and catastrophes. The Ministry of Health has also established a national course in emergencies and management of catastrophes with the assistance of WHO.⁽⁴⁾

In Brazil, 50% of medical school graduates do not get residency positions. These new physicians with minimal clinical training look for work in emergency departments in the non-tertiary care centers, which make up the majority of hospitals in the country. Still, physicians are largely under-trained, underpaid and overstressed by their working conditions. This has compromised patient care and created an incredible

need for improvement in the emergency care system.⁽²⁰⁾

The unreliable availability of most drugs and crucial vaccines, the lack of medical facilities and equipment in EDs, and the insufficient numbers of well equipped ambulances as the only means of transportation (no helicopter or buses) further compromise the services.

This ambulance network consisted of a total of 941 vehicles in 2003, although the current need is for 2500. The ambulances can be requested through a unique emergency contact number.⁽⁴⁾

The Communication Infrastructure Contingency (e.g. walkie-talkies, ham radios, text messaging systems, etc.) was completely absent in all surveyed Iraqi emergency units.

In Tunisia, expanded mobile service coverage; procurement of ambulances and greater use of helicopters; establishment of new EMS department; specializations in emergency medicine as an effort to

establish continuing professional development and the training of doctors and nurses; training of the public; and organizational measures to achieve universal coverage all forward more effective EMS. In Morocco, initiatives in 2005 have included the acquisition of a radio communication network and creation of EMS control centers.⁽⁴⁾

It can be concluded from this study that the general level of the emergency departments and their standards of care are underdeveloped in Iraq. The available major functional units and secondary assistance services were not universal or competent. The protocols were inconsistently applied and the staffing and supporting scheme were not tuned appropriately. There was an overall shortage in drugs, essential vaccinations, vital equipment and facilities, communication infrastructure, audit and training opportunities. This indicates a strong need for effective build up of functionality in Iraq-based EDs.

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