

# Emergency Services in Libya An Initial Assessment for Improvement

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## Abstract

Libya had just emerged from its civil conflict which brought the downfall of the old government structure. The aspiration of the new Libya is to bring development which they felt they deserved in both social and political aspects of their lives. Health care system is one area which was recognized by the transition government that needs immediate improvement. In view of this, the authors perceived emergency services to be a good starting point for improvement against the gargantuan task of the improving the whole system. It is said that emergency care is the front door of the community access to their health care, thus poor emergency services can easily contribute to the discontentment of the community.

This study is a broad initial descriptive assessment of the provision of a hospital-based emergency service. The goal is to gain critical insight of how emergency services is provided and maintained. It attempts to cover a wide range of concerns ranging from admission, intervention, maintenance, protocols, professional development, facilities, and physical condition. It is hoped that the findings may help policy makers in its effort to totally bring meaningful changes to health care system.

The study used the combinations of observations, interview, and prepared questionnaires to conveniently sampled thirty (30) health care providers directly and indirectly involved in the emergency services of the hospital.

Results and recommendations: The hospital is providing 'accident and trauma' services – a limited level in emergency hierarchy of care as against a broad spectrum emergency care on the other end of the hierarchy. The present protocol of examination and admission of severe emergency cases is selective, that is according to what the staff can handle in the area. This has contributed some complexities in the other unit of the hospital like the ICU. Episodic health conditions are directed to the OPD which also contributed to confusion on the part of the patients. Likewise, the present physical facility needs upliftment, from increasing floor area, adding amenities, and upgrading of equipment. New and comfortable facility can help patients and family members lessen psychological burden of emergency condition.

Overall, staffs' expertise and skills no matter how excellent cannot be totally appreciated if the structures and organizational protocols are disorganized. Addressing the issues found in this study will hopefully bring the much needed reform that may ultimately bring the much desired building of trust and confidence of the community – the final yardstick.

**Keywords:** Emergency, Policy, Road Traffic Accidents, Outpatient, Trauma, Health Care Providers, Life Threatening, Emergent, Patient-Centered Care.

### **Abbreviations:**

ISTH -- Iben Sina Teaching Hospital  
ICU – Intensive Care Unit  
ED -- emergency department  
MENA – Middle East and North  
Africa  
VHA --Veterans Health Administration  
OPD- Out-Patient Department  
OT -- Operating Theater  
RTA -- Road Traffic Accident

## **1. Introduction**

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Libya is a North African nation which is a bit larger than Alaska with a population of only 6,355,000 (2010 estimate) [1] of which about 6.35% are non-Libyans [2]. It is the third largest country in African continent, has no foreign borrowings and ranks as seventh richest country among MENA (Middle East North Africa) region based on 2009 GNP (Gross National Product) according to World Bank data [3]. Libya ranks number one in hospital bed density per 10,000 populations among African countries in 2009. In terms of human health resources, Libya ranked 4<sup>th</sup> in number compared to Sweden, UK, and Canada in year 2011 [4]. Non-communicable diseases such as coronary heart disease and injuries from road accidents rank current top health burden.

The health needs of Libyans is primarily provided by the government delivered through primary health care units, polyclinics, general hospitals and tertiary hospitals in the urban areas. The system is open system – meaning patient may go to any secondary or tertiary hospital without referral from the primary care centers. The absence of organized referral system [5] is one cause of the overburden of some hospital referral facilities.

The Libyan health care service, however, is known to be far from being adequate notwithstanding its excellent records having 100% free access to health, an almost 100% attainment of the World Health Organization (WHO) 12 Global health indicators for All by 2000 and many others [6]. The Libyan people have low level of trust to their health services [7]. Acknowledging this state of health care, after the 2011 Libyan revolution, the new transition government saw the urgent improvement of the Libyan health care system.

Authorities acknowledged that ‘Libya main priority for its health system is to rebuild its *emergency services* (emphasis supplied)...Libya is enduring a medical and health care crisis that is in danger of becoming a humanitarian catastrophe if urgent needs are not addressed’ [8].

Vital statistics of the nation shows increasing and worrying state of non- communicable diseases such as cardiovascular condition, diabetes, cancer, and respiratory illness. These diseases have shown to have markedly increased in the last 30 years with cardiac diseases accounting to 37% of mortality in 2004 [9]. Another alarming concern is the steadily rising incidence of traffic accidents which contributed to 11% of all hospital deaths [10]. Libya ranks second in road related deaths within the Arab world [11], 3 times higher among MENA (Middle Eastern and North African countries) average and more than 3 times higher compared to European Union.

Non-communicable diseases like cardiovascular and respiratory diseases and all types of injuries, trauma, and accidents are conditions that are common in emergency visits. The role of hospital emergency services cannot be over emphasized as the struggle between life and death occurs in this area and quick life-saving interventions is a quality that must be present in all emergencies.

The following table shows the country’s health cases in the year 2006.

**Table 1.** Top 5 causes of Mortality/Morbidity in Libya (Source: WHO-Joint Program Review Mission 2006)

Rank	Mortality	Morbidity
1	Cardiac Diseases	Antenatal, postnatal, and Delivery
2	Tumors	Cardiovascular Diseases
3	Road Traffic Accidents (RTA)	RTA
4	Respiratory Tract Infections and Dehydration (Pediatric)	Tumors
5	Diabetes and Chronic Diseases	Gastro-Enteritis (Pediatric)

This study is focused on the emergency services of Iben Sina Teaching Hospital (ITSH). The hospital serves the city of Sirte and its neighboring municipalities and villages- Qasr Abuhadi, Sidra, Bin Jawad, Hisha El Jadida, Harawa, Nofaliya, Uwayfa, and Bual. The hospital has 220 beds capacity with one CT scan and one MRI diagnostic machine. The

study aims to assess the present practices, protocols, human resources, patients' load, physical and facility setup, and professional development in the present emergency services. It is the goal of the study to obtain the current broad state of emergency services that hopefully any problematic areas identified will aid policy makers and authorities concern to chart a way of improving or upgrading the emergency services of the hospital in congruence to the aspiration of the new Libyan government: uplift the system's standard, save precious lives, and ultimately and most importantly build the people's confidence.

Sirte is a coastal urban center with a small population of 141,378 (2006) and is almost equidistant from the two most populous highly urbanized Tripoli and Benghazi. The city belongs to the geographical region called Mantiqa Wusta together with other districts of Wahat, Jufrah and Kufra with total population of 420,871 (2006) [12]. The region has a total hospital bed of 1,061 as of the year 2010 [13].

**Table 2.** Population and Proximity of Shaabia Relative to Sirte

Shaabia (Capital)	Shaabia Population (2006) <sup>1</sup>	Population of Capital cities (1984, july) <sup>1</sup>	Distance of Capital from Sirte
Sirte (Sirte)	141,378	35,278	0
Al Jufra (Hun)	52,092	8,440	278 km
Al Wahat (Ajdabyia)	179,155	65,276	408 km
Al-Kufra (Al Jawf)	48,328	No data available	1,267 km

(2006, General Information Authority of Libya)

**Table 3.** Libya's largest cities' hospitals and distance from Sirte

Shaabiat	Population (Apr 14, 2006) <sup>1</sup>	2012 projected population based on 1.8% 2006 growth rate <sup>2</sup>	Health Facilities <sup>2</sup>		Total Hospital Beds <sup>2</sup> (General and Specialty)	Distance relative to Sirte (km)
			(General Hospital)	Specialty Hospital		
Sirte	141,495	143,030	1	0	220	0
Misurata	550,938	556,915	3	2	500	245
Tripoli	1,065,405	1,076,963	9	4	2,538	448
Benghazi	670,797	678,074	10	2	1680	568

1- Libyan health report, 2012

2- Country health profile, 2012

The data shown above indicates that the hospital of Sirte is most strategic in its district. Bigger general hospitals in Misurata, Tripoli and Benghazi are far enough to comply with the emergency requirement - quick life-saving interventions.

Intentionally clients were not attempted to be interviewed in this study as this is deemed to require a separate set of study. The period was post war and clients' feedback may not be accurate. Transcultural and interpersonal issues were carefully and cautiously noted as they are sensitive and may create unwanted repercussions. Workloads and schedules of some respondents contributed to non-return of questionnaires since hospitals at post war time were so short of health care providers. Pre-hospital emergency services are not included in the study including system of communication between hospital and pre-hospital team.

## **2. Methods**

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The period of the study was between the months of April to July of 2012. The researchers employ observations, interviews, and prepared questionnaires. Selection of participants is combinations of convenience and purposive sampling methods. The participants were limited to a those who are directly connected to the ED and those whose department or services were utilized in emergency situations. Those with direct responsibilities are jobs whose descriptions are specifically in the ED and are composed of senior surgical doctors, nurse supervisor, and staff nurses. Those with indirect responsibilities are healthcare providers (supervisor and doctors) in the ICU, CCU, surgical and orthopedic department, OT surgeons, and ancillaries assisting patients at the emergency bay.

Observations in the area are limited to activities that require a range of minor and major decisions involving the staffs and also include ocular investigation of present physical set up and patients flow and load. It covers all the three (3) shifts of seven- day work. Observations were also made on the flow and movements of the clients. Observations do not include purpose of assessing the staffs emergency clinical skills and expertise. The interview is an informal one-on-one type which combined the forms of convenience and purposive sampling and jotted down in notes. Respondents in interview are recipients also of the handed questionnaires numbering about 18 staffs. The questions are open-ended and

unstructured and are focused more on affirming data from observations, clarification on emergency protocols on admission and interventions, work load, security, and professional development. The years of experience in the ED is given much weight, time, and follow up of interview. Hard fact statistics in the ED were obtained from the statistic office of the hospital. The prepared questionnaires on the other hand were distributed to doctors and staffs that have direct and indirect roles in the ED. A target of 100% of the direct health care providers in the ED was set as respondents considering only their small numbers. There were only a total of eight (8) doctors having rotation at the ED at the time of the study, two (2) of which are expatriates. The nurses numbered a total of seven (7). The numbers of participants with indirect roles are not set to predefined numbers. A total of 30 questionnaires for both with direct and indirect roles in the ED were distributed. The questionnaire has three sections: the 21- item opposing scale of yes or no, and comment; the 5- item open ended questions, and space for the respondents' suggestions.

### 3. Results

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It is known from among the ED staffs that the emergency unit of the hospital is *not* a full spectrum emergency facility; it is operating as an “accident and trauma” facility. Family members, significant others, bystanders or good Samaritans brought their patient/s of whatever conditions in the ED. The doctors on duty conducts a quick assessment and if the case is not within the capability of the ED, the doctor will redirect the patient or companion of the patient to another unit of the hospital – the departmental OPD. The ISTH has its individual OPDs in each major department. In most cases, if not all, it is only the patient aided by his or her companion find their way to the redirected OPD if the case in non- emergent. When serious and life-threatening injury is brought at the ED, the patient is directly transported and provided with definitive treatment at the ICU.

Observations revealed that patients with non-emergent acute or episodic health conditions that wish to seek professional help or intervention would often see any OPD of the hospital. If it is an episodic case, past experience of the patient would direct him or her to the previous OPD he or she had been attended to. But new acute non-emergent case is a choice between an OPD, ICU and an ED on the part of the client. At this point, the

decision to which OPD or area the patient has to see rest solely at the discretion of the patient or family members if the hospital visit is voluntary. It is common to see ill-looking, weak, or grimacing patient in the corridor unaided by an ancillary or un-provided with wheelchair finding their way to the OPD. There were instances of patients inside hospital premises falling down. It is also a common scenario of patients and family members asking for directions of OPDs.

The emergency department (ED) of ITSH is managed and supervised by the Surgical Department of the hospital. A nurse supervisor is responsible for the nursing services. The emergency service of the hospital is open 24 hours a day with one or two doctors in each of the day shifts. There are two 24 hours in-house-doctors available which the ED can call or contact in case their services are needed. There are also specialist doctors in ophthalmology, EENT, and urology who are on all on-call bases. There were 2 nurses per shift assigned in the ED.

The physicians assigned in the ED are all surgical doctors as the ED is under the Surgical Department of the hospital. Both the doctors and nursing staffs at the ER are obviously small compared to the demands of the work. When several patients arrived one after the other, the doctor/s on duty and nurses are at their busiest and pressured time. It was observed that even with three patients (combinations of mild and severe) all together come at one time the doctors attention and demand is already moderately heavy as the doctors conducts assessment, read imaging result, record patient's admission data, medico-legal data, make prescriptions, and direct staffs. Understandably, the nursing staffs complained of low nurse to patient ratio, as Libya has yet to address immediate hiring of foreign health workers. The reinforcement need of the ED is done through in-house telephone system. The workload is usually heavy in late morning towards late afternoon.

Indeed, the facility is small with only two separate rooms, each with two beds, one for male and the other for female patient. There are two standby beds outside of these two treatment rooms. The unit has no observation room, nurse station, doctors' quarters and triaging room. One table serves as the consultation desk and recording area of the doctor/s on duty. It has no waiting room for queuing patients and also no lounge area for family members and significant others waiting for their patient under treatment. At the time of this

study, the resuscitation room, adjacent imaging rooms are non-functional. The ED has complete access to the supporting facilities like the Imaging department, OT, and Laboratory.

There is no triaging in the ER and no operational emergency language. There were situations where a patient and family members with moderately severe injury will not give way to a severely-life threatening patient claiming that they came ahead so they should be attended first. The ED also treats previously dressed wounds or injuries as a follow up intervention.

Security and safety of the staffs are big problems as some patients' relatives brought guns with them. Several times the staffs' works were interrupted due to altercations among warring factions and they have to abandon work to secure their safety. The hospital security at this point is helpless considering unstable peace and order situation and with absence of organized police force at post war Libya.

As to the distributed questionnaires, 53.3% were returned out of the thirty (30) targeted respondents. Some instruments were misplaced or remained unanswered until collection date. Out of 15 total staffs in the ED, 13 (87%) were reached.

Responses from the questionnaires shows a general perception of the need for the physical improvement of the ER, upgrading of the equipment; reactivate the non-functional resuscitation room, mini operating theater, and the imaging unit; equipment upgrading and regular maintenance; professional developmental training on emergency care for doctors and nurses; and night premiums to staffs assigned in the graveyard shift.

ED statistics of the hospital show that from among the classified trauma, 'falls' ranked the highest and followed by RTA. The table below shows the 2010 statistics at the ED.

The ED data from statistics office was started only in 2010 and the 2011 data was never realized due to the civil war. From the data above, the average work load per day in the ED is 131 patients which can be translated to be about 44 patients per shift.



**Table 4 . Iben Sina Teaching Hospital 2010 ED Load (Source: Statistic Office, Iben Sina Teaching Hospital, July 18, 2012)**

Cases	Total	Rank
Examinations & Dressing	41,028	1
Falling Down	3337	2
R.T.A.	1371	3
Admission	1236	4
Guarellings (sic)	624	5
Burn	156	6
Fractures	64	7
(Overall Total for the Year)	47816	8

#### 4. Discussion and Recommendation

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It is high time for the hospital to shift to broad spectrum emergency services on top of its existing accident and trauma services for several reasons. Firstly, the ISTH is strategically located in the Mantiqa Wusta Region that could serve the emergency needs of its residents. The community in this region could not rely on the tertiary hospitals in urban Tripoli for an obvious reason of the proximity of these facilities from their places. Quick and immediate life- saving interventions is an important requisite of emergency care. Secondly, the changing health condition of the region such as the rising cases of non-communicable yet life threatening diseases like cardiovascular, diabetes, cancer, and respiratory dictates the need of comprehensive emergency services. And thirdly, complexities in the present emergency protocol can be eliminated.

Complexities in the present emergency protocol need to be addressed along with those equally important reasons cited above. Eliminating these complexities can have immediate impact to the patronizing community of the region. Below is the summary of the benefits which can be derived once the hospital embarks on upgrading services into a broad category.

1. The tossing of clients from either OPD or ED will cease as all cases will now be attended in the ED.
2. No more wandering clients on the corridors and halls who wished to find or see the

OPD where they will be assessed.

3. Eliminates risks to injuries of clients getting to various OPDs.
4. Prompt and immediate accommodation of the complaints of the clients.
5. Minimize traffic of people and patients in the corridors and hallways.
6. Saves energy and time for the client as they will be attended in one area only.
7. Minimize the risk of spread of infection and cross infection.
8. Refocused care of the clients to their immediate needs.
9. Attitudes of the community towards their health services may change to something positive.
10. Confidence and trust of the community may be gained thus eliminating the long distrust to their health care system.

The recommended improvement, however, is not a one shot solution to the overall problems faced by the community in their health care services as this study is more about services in the emergency only. Emergency services is the community door steps to their health care and providing the community their immediate needs and appropriate care right in the ED can greatly improve confidence to their health care system. The Nova Scotia Administration are good base line for establishing definitive and broad spectrum emergency services.

On the physical side, the ED badly needs remodeling and space expansion. The 25- year old hospital's ED should cater now to fast changing health conditions of the Libyan people which were different 20 or 30 years back [14]. All Emergency conditions are threatening, burdensome, and in some cases devastating to family members and hospital emergency facilities should be psychologically and environmentally comfortable to affected family members. Renovation of the ED should include a family lounge for family members, and waiting rooms for other patients and significant others. The patients' waiting rooms should have distinction between urgent and non-urgent patients [15] which a triaging nurse may assign. Design for these family lounge and waiting rooms should incorporate amenities like snack bar or cafeteria, reading, entertainment center, prayer rooms, and play rooms for children. Comfortable space and privacy area for grieving family members must be given consideration in any remodeling plan. The renovations may eventually eliminate present

perennial woes of queuing patients and family members; chaotic and overcrowded consultation and treatment areas may cease to be a nuisance anymore. Renovation will likewise offer opportunity for upgrading all equipment, instrumentations, and apparatus which respondents identified as aging equipment, outdated, incomplete and unmaintained. Corollary to it, the management must establish a dedicated system of maintenance, control and inventory of supplies, stocks, and equipment.

There should be triaging in the ED as this is one of the standards in any emergency hospitals [16]. This would require separate space with nursing staffs, preferably headed by an expert nurse and with one or two assistants. Triage helps save lives as patient with emergent needs are given attention immediately. Once the patronizing clients understood this, the chaos and 'battle' for immediate attention will be avoided, clients' attitude may change, and precious lives may be saved. Variable load is inherent in any emergency facility. The arrival of patients is highly unpredictable, one or two patients may come at a time and at some time volumes may come altogether as in mass casualty in vehicular or industrial accidents, ordnance explosion, or man-made disaster. The present set up with no system of emergency code and a non-functional paging system, and with only one or two surgical doctors attending the patients it is not strange to see the doctors and staffs overwhelmed when two or more cases arrive at the same time. The average ED load of 44 patients per shift is equivalent to 22 patients per doctor per shift or 2.75 patients per hour. If we base this on the VHA Directive of 2 patients per hour as the baseline of ED physicians load [17], then surely the ED doctors are overloaded for most of the time. The same can be said to the nurse-patient ratio as inadequate as there are only 2 nurses per shift. Assuming a 20% patient load at graveyard shift [18] for a realistic analysis of workload per shift, the morning and afternoon workloads will have an adjusted load of 52.4 patients. This is quite high compared to other standard emergency facilities in the UK or US which is about 20 patients [19].

The data from the statistics office seems confusing due to the item 'admission'. Clarification from the statistics office, 'admissions' meant as all kinds of injuries who were advised to be admitted. This means the possibility of double entry of cases as serious falls, fractures, and RTAs are also admissions.

All patients with immediate needs after triaging should be assigned a bed. Both doctors and nurses perform their independent and collaborative responsibilities on the patients on the numbered or coded beds. The documentation can be relegated to the nurses like filing up of admission and discharge forms and ensuring to preserve evidences for legal purposes. The Doctors can perform rounds without disruption and with ease as patients are assuredly laid on beds. The nurses must be able to quickly act independently or in team and/or in collaboration with doctors in severe and mass ED cases.

The proposed modifications of services above will be beneficial to the community and the hospital as well. This will transform services into true ‘service oriented-patient-centered care’ facility and definitely patients’ satisfaction will improve [20].

### *Conflict of interest*

The authors declare that it received no funding for this study and there is no conflict of interest in relation to their professions or organizational affiliations.

### *Consent from WHO*

The authors did not obtain anymore consent on the publication of the part of the report by WHO, Eastern Mediterranean Region Office, Regional Health System Observatory based in Cairo, Egypt as the source openly welcome comments and feedbacks from this publication in the internet.

([gis.emro.who.int/HealthSystemObservatory/PDF/Libya/Full%20Profile.pdf](http://gis.emro.who.int/HealthSystemObservatory/PDF/Libya/Full%20Profile.pdf))

## 5. References

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- [1] WHO, Eastern Bertelsmann S. BTI 2012-Libya country report, Gutersloh: Bertelsmann Stiftung, 2012. accessed on May 10, 2012  
Available at [http://www.btiproject.de/fileadmin/inhalte/reports/2012/pdf/BTI%2012%Libya.p df](http://www.btiproject.de/fileadmin/inhalte/reports/2012/pdf/BTI%2012%Libya.pdf)
- [2] WHO, Eastern Mediterranean Region Office, Regional Health System Observatory. Health systems profile – Libya.pdf, 2007. Accessed on June 15, 2012, Available at <http://www.gis.emro.who.int/HealthSystemObservatory/PDF/Libya/Full%20Profile.pdf>
- [3] IMF. 2012. Accessed on June 16, 2012 Available at [www.imf.org/external/pulse/ft/reo](http://www.imf.org/external/pulse/ft/reo)
- [4] Benamer H. Healthcare system in Libya factual report, January 2012. Accessed on July 9, 2012 Available at [www.scribd.com/doc/77356124/Libya-Health-Report-2012](http://www.scribd.com/doc/77356124/Libya-Health-Report-2012)
- [5] Cousins M. Health minister stands up to her critics: interview with Dr. Fatima Hamroush. August 2012. Accessed on August 27, 2012 Available at [www.libyaherald.com/2012/08/13/health-minister-stands-up-to-her- critics-interview-with-dr-fatima-hamroush/](http://www.libyaherald.com/2012/08/13/health-minister-stands-up-to-her- critics-interview-with-dr-fatima-hamroush/)
- [6] El Taguri A, Elkhammas EA, Bakoush O, Ashammakh, Baccoush M & Betimal I. Libyan national health services the need to move to management-by-objectives. 2008: 3 (2) Libyan J Med. AOP 080301. Accessed on June 30, 2012 Available at [www.libyanjournalofmedicine.net/index.php/ljm/search/results](http://www.libyanjournalofmedicine.net/index.php/ljm/search/results)
- [7] Cousins M. 2012
- [8] Akpogheneta O, November 2011. Libya’s health strategy to focus on emergency care. Exaro News Accessed on August 7, 2012 Available at [www.exaronews.com/articles/4129/libya-s-health-strategy-to-focus- on-emergency-care](http://www.exaronews.com/articles/4129/libya-s-health-strategy-to-focus- on-emergency-care)
- [9] WHO, Eastern Mediterranean Region Office, Regional Health System Observatory. Health systems profile – Libya.pdf, 2007.
- [10] Mediterranean Region Office. Health systems profile – Libya.pdf, 2007.
- [11] Omar AH, Ashawesh K. Road safety: a call for action. 2008: 3 (3) Accessed on July 8, 2012 Available at [www.libyanjournalofmedicine.net/index.php/ljm](http://www.libyanjournalofmedicine.net/index.php/ljm)
- [12] WHO, Eastern Mediterranean Region Office. Health systems profile – Libya.pdf, 2007.
- [13] [www.citypopulation.de/libya.html](http://www.citypopulation.de/libya.html) , Accessed on July 10, 2012
- [14] WHO, Eastern Mediterranean Region Office. Health systems profile – Libya.pdf, 2007.
- [15] Ross J. Nova Scotia emergency care standards. November 2010. Accessed on June 25, 2012 Available at [www.gov.ns.ca/dhw/publications/Emergency-Care-Standards.pdf](http://www.gov.ns.ca/dhw/publications/Emergency-Care-Standards.pdf)
- [16] Chan B, Schull M, & Schultz S. Emergency department services in Ontario.pdf.adobe. 2001 Accessed June 25, 2012
- [17] Veterans Health Administration, VHA directive 2010-010. March 2010, Accessed June 28, 2012, Available at [www.va.gov/vhapublications/ViewPublication.asp?pub\\_ID=2171](http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=2171)
- [18] Chan B, Schull M, & Schultz S. Exhibit 4. Emergency department services in Ontario.pdf. 2001. (internet)

- [19] ENA, 1999. Accessed on June 27, 2012, Available at  
[www.coloradonursingcenter.org/.../Scope%20of%20Practice%20Emergency](http://www.coloradonursingcenter.org/.../Scope%20of%20Practice%20Emergency)
- [20] Australian College for Emergency Medicine. Guidelines of emergency department design.  
March 2007. ABN 76 009 090 715, Accessed on July 1, 2012  
Available at [www.acem.org.au/media/guidelines-of-emergency-department-design.pdf](http://www.acem.org.au/media/guidelines-of-emergency-department-design.pdf)