

A tool for rapid qualitative assessment of hospital-based emergency medical services among developing health sectors

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Background

The global demand for emergency medicine has greatly increased in recent years.¹ Emergency medical systems have become an essential part of modern public health and medical systems. Developing nations, in particular, are experiencing an increasing need for emergency medical services (EMS) as they experience both the negative and positive consequences of development and modernization. As nations develop, populations experience an "epidemiologic transition"² from the predominant morbidity and mortality patterns of infectious diseases to those patterns more associated with lifestyle. The benefits of industrialization and economic growth are also tempered by new health hazards that include a higher incidence of obesity, sedentary behavior, dietary excess, and substance abuse as well as occupational illness, toxic exposure, vehicular crashes and large-scale violence. These new health risks commonly translate into an increased incidence of cardiovascular and lung disease, diabetes, cancer and injuries.

Emergency medical services are provided during the time-critical "windows of opportunity" for these new "diseases of development." In effect, among developed societies, emergency health has now joined preventive and primary care as

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an integral component of primary and secondary prevention strategies.

Global development of emergency medicine

The globalization of emergency medicine began shortly after its maturity as a specialty. Over the past five years, medical journals have documented numerous reports describing the international practice of emergency medicine, (including those authored by Australians).³ "A global network of international emergency medicine is assisting the development of emergency medicine worldwide and now includes international organizations, academic institutions and individuals...."⁴ However, few of the interventions have utilized validated methodology or standardized procedure.^{1,5}

Emergency physicians involved in international developmental programming among depressed economies have very few references or guidelines other than personal experience upon which to base their decision-making. There is no consensus for definition of indicators or measures of process and health outcome. There are no international standards for workforce, facilities, resource administration or management essentials.

In 1996, Holliman et al. published a model for evaluation of international emergency medical developmental projects.¹ These guidelines offer a foundation of indicators for predicting the effectiveness of plans for developmental programming in emergency medicine. Van Rooyen, et al. also published a model for assessment of emergency medical services as relating to the pre-hospital setting. This useful tool identified indicators for a system-based evaluation of emergency medical services for use in developing nations.⁶ In comparison, there are no current guidelines or models that offer criteria for qualitative assessment of hospital-based emergency medical services among developed nations.

Towards global standards for emergency medical practice

There remains a need for a standardization of methods involving the worldwide promotion of emergency medicine. Evaluations and interventions pertaining to emergency medical systems should be based upon objective indicators.

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Outcomes should be measurable. Measurement requires quantification of certain attributes inherent to the qualities of the system. A qualitative definition of indicators must first be developed before measurable standards and comparative analysis may proceed. Emergency physicians working on developmental projects throughout the world must share a common reference for assessment of existing hospital-based practices.

While providing international health consultation, the author developed and utilized a rapid screening tool for qualitative assessment of hospital-based emergency medical services. Doctors and health agencies in developing nations have expressed a growing need for this rapid evaluation of emergency response capacity. A brief questionnaire, (of fewer than 200 data points), is provided to assist others in design and evaluation of all types of emergency departments. (See Figure 1)

The questionnaire is intended to be applicable for assessment of a wide range of emergency facilities. It may be used to characterize emergency practice among developing nations, but it is also adapted to evaluate the more modern emergency medical system as well.

Discussion

The questionnaire is offered as a screening tool for rapid description of emergency response capacity among emergency departments throughout the world. The author selected indicators from a variety of categories to include resource utilization patterns, patient demographics, staffing patterns, characterization of care-providers, physical plant, equipment and supplies, patient-centered standards, and departmental management systems. By establishing common terminology, the specialty may also progress towards international comparative study among nations according to geographic location, socioeconomic status, burden of disease and workforce development.

Indicators of patient utilization within the unique emergency medical environments of the developing world will allow for comparison with existing standards of the specialty throughout all nations. Patient census data according to acuity, times of presentation, staffing needs, demographics and admission patterns provide useful information for evaluation of service utilization, target population and service area. As an example, the patient-nurse ratios of several nations are listed in Table 1.

Knowledge of standardized values, (such as that of patient-to-caregiver ratios in Table 1), will allow policy-makers to predict needs and focus resources related to emergency

Table 1. Nurse-patient ratios among emergency departments of three nations

Country location	Patients/nurse/day
USA (standard)	3.9
Caribbean island	4.3
Pacific island	5.6

clinical care.

The more developed medical institutions have established standards for the physical plant of emergency department facilities, including waiting rooms, examination rooms and critical care resuscitation rooms. However, those standards may not always apply in the setting of different economic, cultural and professional settings of the developing world. Although standard values for emergency care among the most developed nations may not always be directly applicable to those needs and resources of the developing countries, these existing standards do offer a reference and precedent for comparison of other countries' experiences. A formulary for essential and technologically appropriate medical equipment and supplies is yet to be compiled for developing emergency medical systems and/or those operating under austere conditions.

The Joint Commission for Accreditation of Healthcare Organizations (JCAHO) is a U.S.-based not-for-profit organization that accredits the majority of hospitals in the United States, (more than 19,000). There are comparable organizations in operation among most developed countries. The Joint Commission International (JCI), a subdivision of JCAHO, has been working with the health sectors of developing nations for nearly a decade to develop nation-specific standards for hospital care. Components of this questionnaire that are related to patient-centered and healthcare organization management standards will also integrate with JCI perspectives for development, review and accreditation.⁷

Any strategies for evaluation of developing emergency medical systems should also include a range of global standards for cultural and technological appropriateness, sustainability, evidence-based decision making and intervention effectiveness.

Conclusions

The global demand for emergency medicine has greatly increased in recent years. Developing health sectors in developing countries have expressed a growing need for rapid evaluations of emergency response capacity among emergency care facilities. Emergency physicians involved in developmental programming for these health sectors have very few references or guidelines upon which to base their decision-making. There is a need for a worldwide standardi-

Figure 1. Emergency Department Survey Instrument

Utilization (total annual patient census in various categories)

Presenting at: entire hospital ED Urgent Care

Admitted to hospital:

Patients seen by: Physicians NPs RNs LPNs

Patient acuity: Emergent Urgent Non-Urgent N/A

Presentation time: 7am - 7pm 7pm - 7am

Patient Demographics (total annual patient census in various categories)

Age <5 yo 5-18 yo 19-55 yo >55 yo *N/A

Sex Male Female *N/A

Nationality Local citizen Australia US Other *N/A

* N/A = Data Not Available

Staff (total current year ED staff)

Physicians NPs RNs LPNs Other staff

Physician Characteristics

<p>Specialty</p> <p>Anesthesia <input type="text"/></p> <p>Int. Med <input type="text"/></p> <p>Ob-Gyn <input type="text"/></p> <p>Orthopedics <input type="text"/></p> <p>Pediatrics <input type="text"/></p>	<p>Psych <input type="text"/></p> <p>Pub. Hlth <input type="text"/></p> <p>Surgery <input type="text"/></p> <p>Other <input type="text"/></p> <p>Specify: <input type="text"/></p>	<p>Emergency course certification</p> <p>Adult Cardiac Life Support <input type="text"/></p> <p>Pediatric Life Support <input type="text"/></p> <p>Advanced Trauma Life Support <input type="text"/></p> <p>Mass Casualty <input type="text"/></p> <p>Other (specify) <input type="text"/></p>
<p>Training Location</p> <p>Local med school <input type="text"/></p> <p>Australian med school <input type="text"/></p> <p>US med school <input type="text"/></p> <p>Other (specify): <input type="text"/></p>	<p>CME</p> <p>Avg hrs / physician / year <input type="text"/></p>	

Nurse Characteristics

Specialty

Emergency	<input type="text"/>
Critical Care	<input type="text"/>
General	<input type="text"/>
Other (specify):	<input type="text"/>

Emergency course certification

Adult Cardiac Life Support	<input type="text"/>
Pediatric Life Support	<input type="text"/>
Advanced Trauma Life Support	<input type="text"/>
Mass Casualty	<input type="text"/>
Other (specify):	<input type="text"/>

Training Location

Local nursing school	<input type="text"/>
Other (specify):	<input type="text"/>

Continuing Education

Avg hrs / nurse / year	<input type="text"/>
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Schedule

	Weekdays			Weekends		
	Day	Evening	Night	Day	Evening	Night
Physicians	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nurse Practitioners	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nurses	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Lab staff	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Xray staff	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Clerical	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Orderlies	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Physical Plant

Inside: Treatment Area

total treatment area sq ft	<input type="text"/>
patient beds	<input type="text"/>
avg sq ft / pt treatment area	<input type="text"/>
sq ft / resuscitation room	<input type="text"/>

	<i>Circle yes or no:</i>	
controlled entrances	Yes	No
centralized staff work area	Yes	No
adequate patient privacy	Yes	No
clean	Yes	No
instruments out of sight	Yes	No
adequate space	Yes	No
adequate lighting	Yes	No
beds & chairs adequate	Yes	No
resuscitation/trauma room	Yes	No
critical care area	Yes	No
urgent care area	Yes	No
private OB/Gyn exam area	Yes	No
Capable of ENT/Ophth exams	Yes	No

Inside: Treatment Area, continued

designated suture area	Yes	No
orthopedic area	Yes	No
staff lounge	Yes	No
hazardous materials shower	Yes	No
respiratory isolation area	Yes	No
violent patient isolation area	Yes	No
storage area	Yes	No
radio communications area	Yes	No
separate public & staff restrooms	Yes	No
patient tracking board	Yes	No
water fountain	Yes	No
ED located near lab	Yes	No
ED located near radiology	Yes	No
ED located near OR	Yes	No
ED located near ICU	Yes	No

Inside: Reception Area

Sq footage
chairs

services brochure	Yes	No
educational posters	Yes	No
nonsmoking area	Yes	No
children's area	Yes	No
bulletin board	Yes	No
telephone access	Yes	No
privacy area	Yes	No
placard identifying staff	Yes	No

Outside

adequate signage	Yes	No
adequate parking	Yes	No
ambulance ramp	Yes	No

Critical Equipment

	Number
cardio-respiratory monitors	<input type="text"/>
non-invasive oxygen saturation monitors	<input type="text"/>
blood pressure monitors	<input type="text"/>
sphygmomanometers	<input type="text"/>
stethoscopes	<input type="text"/>
portable x-ray	<input type="text"/>
electrical back-up generator	<input type="text"/>
mechanical respiratory ventilator	<input type="text"/>
resuscitation supply cart	<input type="text"/>
intravenous flow pumps	<input type="text"/>
suction unit	<input type="text"/>
oxygen	<input type="text"/>
bag-valve mask manual ventilators	<input type="text"/>

Patient-Centered Standards

	Admission triage screening	
	Yes	No
Discharge instructions	Yes	No
Patient and family rights	Yes	No
Assesment of patients	Yes	No
Patient care protocols	Yes	No
Patient and family education	Yes	No

Department Management

Department director	Yes	No
ED policy/procedure manual	Yes	No
ED operations manual	Yes	No
ED orientation manual	Yes	No
Medical records management	Yes	No
Staff qualifications or credentialing system	Yes	No
Staff education	Yes	No
Departmental budget	Yes	No
Regular staff meetings	Yes	No
Infection control program	Yes	No
Engineering maintenance plan	Yes	No
Fire safety plan	Yes	No
Quality management and improvement process	Yes	No
Morbidity & mortality case review process	Yes	No

Questions

During your experience in the ED, did there appear to be adequate numbers of staff members? Yes No

Are you aware of any prior difficulties at the ED regarding the adequacy of staff numbers? Yes No

Please name three strengths and three weaknesses of the ED?

Strengths

Weaknesses

Emergency De

Staff Interview

zation of methods and nomenclature involved in emergency medicine. An instrument for assessment is here provided to assist others in standardizing methods for rapid evaluation of emergency response capacity among emergency care facilities throughout the world. The final intended outcome of this report is the promotion of global health through development of emergency medical services. Through application of this assessment tool, decision-makers may also gain evidence to better guide their efforts of program development for emergency medical services.

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To start early is easy going, to start late is breakneck

E mua āta haere, e muri tat kimo

Maori proverb