

## INTERNATIONAL EMERGENCY MEDICINE

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Although EM has been well established and officially recognized in relatively few countries, there is an increasing interest in EM and pre-hospital emergency care throughout the world. Governments and universities are becoming more interested in the emergency care systems of their countries, and some of these countries are trying to adopt mature and tested emergency care delivery systems. International conferences, physician exchange programs, television shows, increasing economic and medical system development, and rapid urbanization are partly responsible for this increasing interest. There are two main models of emergency care delivery in the world: Anglo-American, and Franco-German. Each system has advantages and disadvantages. This article presents reasons for interest in EM, the development status in different countries, the difference between the Anglo-American and the Franco-German models, recommendations for countries in an early phase of specialty development, the role of organizations involved in EM, opportunities for faculty members and students and residents, and benefits of this international contact, and some upcoming events.

#### Why is Their Interest in International Emergency Medicine?

Rapid urbanization, increasing volume of outpatient visits, economic expansion, medical and technological advancements, and public needs are the main reasons for improvement of EM. Emergency Medical Services (EMS) system development in the United States (US) was stimulated by a combination of these reasons (1,2). However, there are some other interesting examples in the world. Developing countries such as Barbados, Costa Rica and Turkey (3,4) have started EM residency programs, while many industrialized European countries still have

not begun standardized residency programs or residency-equivalent specialty training in EM (5).

Urban emergency departments (ED) are often crowded; EDs often serve high volume outpatient clinic as well as critical care and trauma centers. In EDs stuffed by rotating interns, residents, or other non-EM specialty doctors who have no advanced training in emergency care, the ED mainly plays a triage role, and this results in increased health care costs because of higher admission rates for evaluations by specialty services (6). In places where there is poor or undeveloped pre-hospital care, there is higher mortality from trauma and other emergency medical problems (7). This obviously can be one of the most important reasons for public and media pressure on the governments in developing countries.

The population "demographic transition" from younger to an older population and "epidemiological transition" from infectious disease to injuries, cancer and atherosclerotic heart disease are additional reasons for need for improvement in EM (8). There has been a recent awakening by many countries that they should develop EM because of the lessons coming from wars and traffic accidents (trauma) or from public and media pressure on the government. EM in the USA has fully matured as a specialty and other countries via media or published journals know this. The countries which have formally investigated the system in the US decided to adopt and apply the mature and tested US system to their country. The collapse of Communism has opened multiple countries to people and ideas from outside. This development has affected ex-Soviet Union and the Eastern European countries (Russia, Ukraine, Estonia, Slovenia, Hungary, and Bosnia ext.) and China.

Multiple International Emergency Medicine (IEM) conferences have just gotten started in the past 8 years. Year to year the number of participant countries is increasing and the interest in improvement of emergency care in the whole world is becoming more widespread.

There are multiple reasons for the influence of Anglo-American model on international development, including some textbooks, journals or practice guidelines used throughout the world (9). In addition, the Anglo-American model of EM is popularized by the TV show "ER" and

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"Rescue 911" in most of the world.

#### Development status in different countries

The World Bank has categorized countries into four levels of economic and health care system development (10). These divisions are not comprehensive and do not describe the diversity between countries. At "level one" are the countries with highly developed economies and health care systems such as Japan, US, members of European Community, and Australia. However, some of these countries, such as Japan, have a limited EMS system and training, as do some European countries.

The features to consider in the classification of the emergency health care development status of a country are if EM is established as a specialty, if there is an organized EM society or residency programs, a specialty journal, a specialty certification board, and also patient care systems and management systems (quality assurance, peer review). If we look these categories, countries can be classed into three groups: underdeveloped, developing, and developed or mature (11).

In underdeveloped emergency care systems:

1. EM is not yet recognized as a specialty.
2. Academic activities and specialty systems (national organization, residency training, board certification, and official specialty status) do not yet exist.
3. EDs are usually staffed by residents, and/or physicians untrained for emergency care from other specialties.
4. EMS system does not yet exist.
5. Seriously ill or injured traumatized patients are often brought to the hospitals by taxi or private car.
6. The EDs have a simple triage system.

Countries with underdeveloped emergency care systems are Jamaica (12), Lebanon (13), Malaysia (14), Nepal (15), New Guinea (16), Pakistan (17), Trinidad, Tobago (18), and Vietnam (19).

In developing emergency care systems:

1. EM is recognized as a specialty requiring specialized physicians (emergency physicians).
2. A National EM society usually exists.
3. Residency training is usually underway.
4. Specialty board certification is either developed or on the horizon.
5. An EM Journal may report national research, but other academic areas are not well developed.
6. EMS exists, and seriously ill and injured traumatized patients are often brought to the hospital by Basic Life Support or EMT-equivalent ambulances.
7. EDs are staffed by Eps
8. Directors of EDs are frequently Eps.

Countries with a developing emergency care system include Armenia (20), Bosnia and Herzegovina (21), China (22), Israel (23), Jordan (24), Nicaragua (25), the Philippines (26), Saudi Arabia (27), South Korea, Taiwan (28), and

Turkey (3, 4). Today, countries, which have started EM residency programs include Barbados, Bosnia and Herzegovina, China, Costa Rica, Hungary, Jordan, Nicaragua, Philippines, South Korea, Taiwan, Turkey.

In mature emergency care systems:

1. EPs have developed academic emergency care programs.
2. There are established subspecialty fellowships (pediatric EM, EMS, Disaster medicine, Toxicology, ext.).
3. There is a national database about emergency care.
4. There are peer-reviewed EM journals.
5. EDs are staffed by board certified Eps.
6. Severely ill and injured patients are brought to the hospitals by a well developed EMS system which has advanced care providers.
7. Systems for patient care, management, quality assurance, peer-review, risk management, cost-effective practice, and patient satisfaction are mature.

Countries with mature emergency care are Australia (29), Canada (30), United Kingdom (7), Hong Kong (31), and the US.

#### Differences between the Anglo-American and the Franco-German models,

There are two main models for emergency care in the world: the Anglo-American model and the Franco-German model.

In the Anglo-American model which is "brings the patient to the hospital", EM begins in the field with EMTs or paramedics, patients are brought to hospital-based emergency departments and patient care continues in the ED where EPs provide definitive care. In this model, EM is an official recognized specialty under the control of EPs. Countries including this system are Australia (29), Canada (30), Hong Kong (31), Israel (23), New Zealand (9), the Philippines (26), South Korea, Taiwan (28), United Kingdom (7, 9) and the US.

In the Franco-German model, physicians and medical technology are sent to the scene and EM is practiced in the field where physicians (usually anesthesiologists) provide care. EDs are often rudimentary because patients are directly admitted to inpatient specialty services for initial exams, depending on presenting symptoms or first findings in the field. EM is not an officially recognized specialty and EDs are mostly controlled by anesthesiologists or surgeons. Countries such as Austria (32), Finland (32), France (33), Germany (34, 35), Latvia (36), Norway (32), Poland (37), Portugal (32), Russia (32), Slovenia, Sweden (38), and Switzerland (32), are using this type of emergency care.

There are several problems within the Franco-German model:

1. Physicians who work in the pre-hospital and triage areas are not well trained for emergency situations, especially

trauma cases, not well supervised, and not subject to the same quality assurance controls as physicians in the Anglo-American systems (9, 33, 34, 36).

2. Long response times and poor mortality and morbidity rates have been reported for patients who sustained multiple trauma (35, 37).
3. Paramedics in most countries must wait for physicians to arrive on the scene before performing life saving procedures (9, 33, 34).
4. Patients may be mis-triaged to the wrong inpatient specialty.
5. Inefficient interfacility transfers are required to take care of patients with multi-system problems.
6. There is often little coordination between the out-of-hospital emergency care system and physicians working EDs or the out-of-hospital arena (32).
7. This system requires larger number of physicians and greater vehicle expenses than Anglo-American System

Despite the concerns, there is no comparative multinational studies exist to demonstrate the superiority of a model over the other. Fanatic physicians of each system explain their systems to other country members in international conferences, meetings and with other contacts.

#### **Recommendations to countries which are in an early phase of emergency care system development**

For the least developed countries, advanced out-of-hospital and hospital-based systems would not be effective. In these countries, training of physicians and other health care workers would be useful and effective. An emergency medical system which is effective does not have to have high technology or expense, but the main focus should be on emergency training for physicians and other health care workers. Therefore, developing the specialty internationally will require the training of qualified physicians and support staff.

Standardized courses such as Advanced Cardiac Life Support (ACLS), Basic Trauma Life Support (BTLS), Advanced Trauma Life Support (ATLS) (39), Emergency Trauma Care (ETC), Pediatric Advanced Life Support (PALS), and Emergency Medical Technician - Ambulance (EMT-A) or modified versions to fit local health services, can be used as the basis for initial training and setting care standards.

Emergency physicians (EP) offer a broad range of skills that are useful both in the developed and in developing nations. The general skills of the EP include the provision of emergency and primary care, management outpatient facilities, patient education, coordinating specialty care referrals, and conducting clinical research. Specialized EP skills include resuscitation, management of critical care, toxicology, trauma and environmental illness, and emergency out-of-hospital and disaster response systems. EPs are also leaders in prevention efforts for injury, violence, and substance abuse. Perhaps the most

important benefit is that skilled EPs are capable of managing complicated cases (5). They improve the quality of care while simultaneously reducing health care costs by reducing hospitalization rates and using cost-effective tests.

What basic health system improvements can EM offer to developing nations?

- Basic trauma care.
- Training of non-physician pre-hospital care providers, such as police, security personnel, fire department workers, teachers and also taxi drivers (especially in the underdeveloped or developing countries).
- Decreased hospital admissions for diagnostic work-ups which can decrease costs of care.
- Management of multi-casualty incidents.
- Coordination of care for patients with multi-system problems.

However, there are potential difficulties in establishing EM in some countries, including fear by other specialties of "loss" of patients or revenue, lack of understanding of the breadth of the specialty, cultural resistance to adopting something "American", perception that is hard work and low-paying relative to other specialties, and lack of exposure to role models for interested students, residents or faculty.

Although most people in the world have at least access to basic health services, it is obvious that good emergency health care is a necessity, and transfer of knowledge will be hallmark for improvement of IEM. Since the US has advanced an emergency health care system and the longest history, lessons learned the US may benefit other countries which want to develop their emergency health care system.

In the early phase of emergency health care development, governments must undertake careful assessment and understand the national resources, governmental structure, population demographics, culture, the current emergency health care system, and health care needs (40).

In development of EM, the following features would be necessary;

1. A cadre of physicians interested in establishing the specialty.
2. Governmental support.
3. Public education about the new system.
4. Support from other physicians, departments and medical personnel.
5. Infrastructure components:
  - Health care facilities capable of providing emergency care.
  - Training programs for both physician and non-physician personnel.
  - Availability of referral and follow-up care by other specialists.

Transport and communication systems to allow rapid patient access to health care facilities.

To begin the process to develop the needed local expertise in EM, several methods have been used (5), and each method has some advantages and disadvantages;

1. Local interested physicians can complete an entire EM residency program in a country where the specialty is recognized and advanced. The physician can then return to his home country as faculty and use his residency training as a model to start a local program. Some difficulties in this method are;
  - The restriction on foreign physicians obtaining medical practice licensure in some countries, such as the US.
  - The tendency of non-US residency graduates to stay in the US after their residency.
  - The relative shortage of US EM residency positions.
  - The greater cost of transporting and housing personnel for training in the US rather than in their own country.
  - Trainees have to speak fluent English.
2. Physicians with years of clinical experience in the practice of EM codify their knowledge and then start a training program. This was how the original training programs in the US and other countries were started. In this method, understanding of the EM mentality and investigating the most applicable system are very important. A modification of this approach has been to use experienced visiting EM faculty to assist countries developing EM programs. This visiting faculty usually stays for an extended period (months to years) to work in parallel with local medical faculty. This approach is currently operational in Costa Rica and Turkey (3, 4). This method is difficult because of the expenses and moving EM faculty to another country, and the requirement for language fluency.
3. Physicians from other countries to come to the US for training programs and courses (weeks to months). These would focus on EM such as EMS, trauma, ED management, or clinical skills. These types of courses can be very expensive for physicians from low budget countries and unfortunately, there is currently little outside funding for these efforts.
4. Short training courses can be taught by experienced EM faculty in target countries. The World Health Organization (WHO) in implementing Primary Health Care practices around the world has used this method with success. These courses could include country specific versions of ACLS, ATLS, PALS or others. It is obvious that these courses and transportation of faculty are expensive but are most practical when short in duration (<4 weeks).

After the initial training, educated physicians can provide effective emergency care and provide the correct planning of the emergency system in their home countries. If residency programs are created, visiting faculty coming from countries which have an advanced emergency care system would be benefit. Connecting of national societies of EM for bilateral transfer of knowledge and experience can help to improve the system.

The General Sequence of National EM Development can be viewed as:

1. Interested cadre of physicians forms.
2. Model clinical department set up.
3. National professional society formed.
4. Training standards and curricula set.
5. Residency programs organized.
6. National specialty journal published.
7. Specialty exam established.
8. Declared an officially recognized specialty.

Additional longer term goals for EM development include integration with the country's government and military, education of all medical students in basic EM, public education by EM (appropriate use of EDs, injury and violence prevention ext.), collaboration with international societies and research projects.

#### The role of some organizations involved in EM

The Society for Academic Emergency Medicine (SAEM) and other organizations such as the American College of Emergency Medicine (ACEP), and the Canadian Association of Emergency Physician (CAEP) should make training and educational materials readily available to physicians from other countries to assist their programs and curricula. Academic emergency medicine institutions can also provide training for physicians and other health care personnel from other countries in their programs. This training can be within the residency-training program or in post-training fellowships or as special courses and seminars (5).

The Society of Academic Emergency Medicine (S.A.E.M.) projects in IEM include:

- Maintaining a reference database on IEM rotations and activities.
- Creating standard curricula for different types of IEM Fellowships.
- Conducting didactic sessions on IEM at the SAEM annual meeting.
- Planning for conjoint conferences with the European Society for Emergency Medicine, British Accident and Emergency Medicine faculty, and in the Middle East region.

The Middle East region has two important associations: the

Israeli Association for Emergency Medicine and Emergency Medicine Association of Turkey (EMAT). The further connection of these groups can activate improving EM and Emergency Medical Services in the Middle East.

Today, IEM exists as a global network of academic institutions, national societies, medical schools, hospitals, government ministries and international organizations. In fact, there are two types of IEM organizations: Relief, and development. Relief organizations provide episodic emergency care to populations in disaster or at other times of crisis. Doctors Without Borders and the International Medical Corps (IMC) are well known relief organizations (41, 42). IMC also established Europe's first Anglo-American ED and EM residency Program in Bosnia (21).

The IEM development organizations help other countries establish and develop emergency care systems. The most prominent example of this group is Emergency International (EI), which today, has long term development projects in Israel, Central America, Eastern Europe and China (43). Another active organization is the Pan-European Center for Emergency Medical Management Systems (PECEMMS). PECEMMS supports "international transfer of information, contacts and projects in emergency care" and sponsors the biennial Pan-European Conference on Emergency Medical Systems (PECEMS). The fourth PECEMS was organized in Croatia with 21 participant countries last year, and the fifth PECEMS will be in Turkey in 2000 (44). The Society for Academic Emergency Medicine (SAEM) International Interest Group concentrates "on providing an overall academic framework for IEM activities" (45). ACEP sponsors many programs benefiting emergency physicians around the world, including the International Conference on Emergency Medicine (ICEM), and through the journal *Annals of Emergency Medicine* (45). The group has also had international participants from all around the world. The Australian College of Emergency Medicine, British Association of Accident and Emergency Medicine, and Canadian Association of Emergency Physicians also sponsor the biennial ICEM. The seventh ICEM was organized in Vancouver/Canada in 1998, and the ninth ICEM will be in Boston/USA in 1999 May with the support of the Hong Kong College of Emergency Medicine (46). The World Association for Disaster and Emergency Medicine (WADEM) focuses on the development of disaster management systems and the group also sponsors the biennial World Congress for Disaster and Emergency Medicine (WCDEM) and publishes the journal *Prehospital and Disaster Medicine* (47).

Organizations, societies or institutions should encourage the two-way exchange of knowledge and of physicians and other health care personnel. Some of selected EM faculty can act as a consultant to assist with establishing EM training in other countries. These consultants can analyze the systems of the countries and can advise about emergency medical design and process.

In addition, international research projects should be promoted. This can help the academic development of EM in developing countries. Exchanges can take place during IEM meetings or by direct connection between EM societies in multisided videoconferences or via IEM fellowship programs. Standardized IEM fellowship programs could be effective for US EM residency graduates or for trainees from other countries.

Academic institutions have established three types of IEM Fellowship Programs:

1. Clinical Fellowship for the US EM residency graduates, such as the 1-2 year programs offered by Loma Linda, Pittsburgh and John Hopkins Universities.
3. Observational Fellowship for foreign medical graduates, such as the 1-year program offered by Pennsylvania State University since 1994 (48). Today, three fellows from China, Jordan and Turkey are enrolled in the program. George Washington University also has the same kind of program.
4. Clinical Experience Type for foreign graduates; this is clinical training "outside" of an EM residency program, but none of this type are yet operational.

In addition, IEM conferences could be benefit for developing countries. However, fees for the conferences attendees from low budget countries should be reduced. With an increased number of participants from developing countries, the value of the conference can be enhanced. In addition, print or electronic publications, and the Internet can be of benefit for EM in developing countries.

#### **International opportunities for faculty members, students, and residents**

Interest in IEM is an obvious chance for learning about new cultures and interacting with new physicians or emergency personnel in different countries. The current situation, approaches to emergency care, and the common problems of the countries could be learned from these contacts. In addition, experienced visiting physicians can have an opportunity to influence EM system process or structure in an early developing phase. They can act as creators of original system design and development of emergency care. In addition, residents can find an opportunity for procedure performance in underdeveloped countries where enough physicians are not available. They can see and treat a wide range and different types of patients or diseases.

However, faculty and physicians in mature system countries who are interested in improvement of emergency care in the other countries have to start to work to understand the current situation of emergency care, the economic and the social status of the target countries. This preparation period is very important for effective benefit for the underdeveloped or developing countries. It is

obvious that unprepared projects and faculty may not be beneficial for them. Another important result can be learning difference between underdeveloped, developing and mature systems, so visiting physicians, residents or students would understand the importance and situation of their own systems and see medical problems not common in their countries.

In addition, these contacts can open some opportunities for foreign physicians or emergency personnel to have advanced education in countries which have mature emergency care, such as Australia, United Kingdom, and the US. Therefore, mature system physicians should promote international collaborative research projects, participate in IEM conferences, provide educational materials, and develop connections with other national EM organizations or societies.

### Conclusion

EM is a very new specialty in most of the world, and there is a growing interest in EM. Rapid urbanization, increasing outpatient visits, economic expansion, medical and technological advancement, and public needs are the main reasons stimulating EM system improvement. In the early phase of EM development, governments have to carefully assess national resources, culture, population, and demographics, which affect emergency health care. Countries can be classed into three group of EM system development: underdeveloped, developing, and developed (or "mature"). Developed countries can help the developing and underdeveloped countries in their early phases of improvement of emergency care. Therefore, knowledge exchange in international conferences, via Internet, and via physician exchange programs will be very important for development of emergency care internationally. Organizations and EM societies will be playing major roles in academic development of the specialty.

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