

# Medicine and Society

## Recognizing emergency medicine in India

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### INTRODUCTION

Until recently, emergency medicine was practised throughout the world as something of an afterthought. Hospitals had designated areas for patients arriving in need of immediate evaluation and treatment. These 'casualty wards' or 'accident rooms' evolved in India and in other parts of the world without the benefit of a medical specialty to promote research and standardization.<sup>1-3</sup> Imagine what operating theatres would be like without surgeons and anaesthesiologists trained specifically to work in and continually improve them!

### WHO SHOULD STAFF THE EMERGENCY DEPARTMENT?

As emergency departments (EDs) provide a broad exposure to many medical and surgical conditions, they are excellent places to learn in, and many physicians who work in EDs are in the earliest stages of medical training. Appropriate care is not assured unless senior residents or consultants are called in to deliver it. However, it is the inexperienced junior physician who decides whether or not to call for advice. If not a junior resident, a senior doctor in a surgical field such as orthopaedics may see all the patients, whether they have fractures or acute myocardial infarction. This was common in the USA until the 1970s, but since the majority of problems which present to EDs have a non-surgical pathology, they are better evaluated by medical doctors. In some hospitals, EDs are staffed by internists or general practitioners, but what of the many patients who present with surgical problems such as trauma, as well as the frequent presentation of children? A review of over 4000 ED visits (from 4 randomly sampled months in a year) at the Sundaram Medical Foundation hospital, a 125-bed hospital in Chennai, revealed that the ED averaged 40 patients per day of whom about 17% were children. About 49% of patients seen in the ED had medical problems, while 44% had surgical ones (including orthopaedics, otorhinolaryngology and ophthalmology). Fever and trauma were the two most common presenting complaints. Among trauma cases, more than half were due to road traffic accidents (RTAs).

Excellent care could be provided by a staff of doctors representing internal medicine, general surgery, paediatrics, orthopaedics, otorhinolaryngology, ophthalmology, obstetrics and gynaecology;

or by a consultant in emergency medicine (EM) trained to initiate a work-up in all these fields. An emergency physician (EP) can stabilize the critically ill and determine which patients require urgent referral or consultation. The efficiency of such a physician is obvious since the prevalence of various presenting illnesses may change from time to time. In addition, the initial management of emergency patients and evaluating the urgency of their needs (i.e. inpatient *v.* outpatient management) are skills worth developing and deserving of supervision by a consultant physician.

Several countries including the USA, England, Canada and Australia have recognized EM as a separate specialty. Training in EM is geared specifically towards evaluating, stabilizing and, in some cases, treating (in others referring or admitting) whoever walks or is carried in through the door. This includes training in several major and minor specialties likely to be needed in the management of such patients.<sup>4</sup> A broad curriculum allows EPs to recognize and stabilize critically ill patients as well as to refer or definitively treat patients with a wide range of illnesses. If seen by a well-trained EP, many patients do not have to wait to be seen in the hospital by another consultant; outpatient follow up can be scheduled with a specialist as needed. This is less likely without an EP, unless the ED is staffed by a specialist from every field, which is clearly a much less efficient solution.

Patient disposal is one of the most important aspects of clinical practice. Significant morbidity and mortality may result from inappropriate discharge, especially in the ED where acuity of illness may be higher than in an office or clinic. An inexperienced junior resident, functioning essentially as a clerk, is not well suited to make this decision, nor is a consultant awakened at 3 a.m., who is given only a verbal description of the patient by the junior physician. The decision to discharge the patient is more carefully made by an EP with appropriate training, in consultation with the appropriate specialist. Ideally, an ED should be supervised by a consultant EP 24 hours a day.

### ENSURING STANDARDS IN EMERGENCY DEPARTMENTS

Emergency physicians specialize in the design and improvement of the ED itself. We have reported our experience in improving ED services and creating a formal training programme in EM in Chennai with support from EPs trained overseas.<sup>5</sup> Without basic standards being laid down, EDs will vary enormously in their ability to treat various critical and common illnesses. A defibrillator in the fifth floor intensive care unit does little good to a patient in cardiac arrest in the ground floor ED. Similarly, a rigid cervical spine collar in the orthopaedics cabinet elsewhere in the hospital may not prevent quadriplegia if it is placed only after an orthopaedic consultation.

A recent detailed survey of 18 EDs in Chennai documents

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marked inconsistencies in preparedness and facilities available (van der Vlugt *et al.*, unpublished data). This survey included two large government teaching hospitals, one private medical college hospital, two corporate hospitals and 13 private hospitals and nursing homes. The bed strength varied from 20 to 2000, with a mean ED bed strength of 5 (range 1–20). Overwhelmingly, most of the EDs surveyed were staffed 24 hours a day with medical graduates, with no more than 1–2 years of clinical experience. Most (89%) of the hospitals used recent medical graduates as Casualty Medical Officers (CMOs) the majority of the time, with 12 out of 18 exclusively using medical graduates as CMOs round the clock. Four EDs had registrars, consultants, or postgraduate-level physicians occasionally in shifts, but this practice was not consistent. A consultant-level physician was the CMO 24 hours a day only at the two government medical college hospitals. In only one out of the 18 hospitals surveyed did the CMO have any specific training in EM. Although trauma was the most common diagnosis in all these EDs, according to staff interviews, only one out of 18 hospitals had CMOs who were trained in Advanced Trauma Life Support (ATLS). Out of 18 hospitals, three had CMOs trained in Advanced Cardiac Life Support (ACLS), and one had CMOs trained in Paediatric Advanced Life Support (PALS).

The survey also found a varying availability of equipment in EDs. Equipment and medications were not standardized from ED to ED. Often medications from one part of a resuscitation algorithm would be available, such as epinephrine for ventricular fibrillation, while another part of the same treatment algorithm would not be available, such as a defibrillator or equipment for intubation. While all the 18 hospitals had defibrillators, they were available within the ED in only 8 hospitals. Seven EDs did not have the equipment for adult intubation and 11 did not have paediatric intubation equipment. Three EDs, including two of the busiest, did not have ECG machines. Even the most basic drugs for resuscitation were not uniformly available in all EDs. Thus, the survey clearly shows the lack of minimum standards for EDs and the poor infrastructure that exists even in a metropolitan city such as Chennai. Only a few CMOs had any specific training in resuscitation or EM, and the majority of them had no training other than their basic graduation.

Some may argue that the non-adherence to standards is the fault of the hospital administration, but it is a doctor's responsibility to insist that the necessary equipment and protocols for appropriate patient care are available. This demand is more likely to be met if the physician is a consultant rather than a transient trainee. Furthermore, a consultant is better prepared to determine the appropriate protocols, medication and equipment for an ED, as an EP sees a wide variety of patients. To provide a uniformly high level of emergency care to all citizens in India, emergency medical treatment and the training of EPs must be standardized and monitored.

#### TRIAGE AND PRE-HOSPITAL CARE

Triage is an important part of EM. It is inefficient and potentially lethal to make a patient with crushing chest pain wait while another with a sprained ankle is treated on a first-come, first-served basis. EDs can evaluate, stabilize, treat and refer large numbers of patients properly only if the appropriate triage systems are in place. These systems are best devised and improved by the physicians who work with them regularly. The importance of triage is one of the ways in which EM is different from the many specialties with which it intersects. By definition, an internist is an

expert in diagnosing and treating a wide range of illnesses in adults, but not in order of potential severity, which is crucial to EM.

Emergency departments are designed so that every patient is immediately but briefly evaluated and sorted into groups based on acuity and potential severity of illness. Usually vital signs are determined, complaints, past medical history and medications are recorded and patients are assigned a level of priority, which governs the speed with which they advance through the department. Stabilizing the patient and ruling out potentially life-threatening diagnoses are more important to the EP than forming a definitive diagnosis. These priorities are different from those in most medical fields, and are made necessary by the prevalence of life-threatening processes and the lack of continuity of care in the ED.

In many instances, the medical treatment of acutely ill patients should begin before they reach the hospital. Accident victims, as well as patients with cardiopulmonary arrest, may be brought by ambulance. Usually, ambulance personnel have little more than a driver's licence. Indeed, as shown in a study from Chennai, only 4% of those with out-of-hospital cardiorespiratory arrest received bystander CPR.<sup>6</sup> A large number of patients might have had better outcomes if supportive or definitive treatment was initiated by trained ambulance personnel. For example, early defibrillation has been shown to decrease mortality due to cardiac arrest in the USA.<sup>7,8</sup> Similarly, simple airway manoeuvres might save the life of a patient with head injury.<sup>9,10</sup> In the USA, EPs specialize in the medical design and control of pre-hospital services such as the training of ambulance attendants and paramedics. Significant improvement in the ambulance system can be made at limited expense,<sup>9</sup> along with the implementation of the principle of hospital categorization. Emergency physicians and their hospitals, working in conjunction with the ambulance, police and fire departments, as well as the appropriate specialists in their hospital, can designate certain hospitals as the primary receivers of patients with certain types of illnesses. For example, a hospital with extensive surgical and diagnostic capability could be designated a trauma centre and all major trauma victims transported to such a centre. This categorization allows for rapid transport as the ambulance personnel are already aware of the availability of appropriate equipment at such a centre, and the patients are less likely to be shifted to other hospitals. The trauma centre would be responsible for a stand-by trauma team and an operating room ready at all times. A study done in the USA revealed that states with established trauma systems had a 9%–17% lower mortality rate than those without.<sup>11</sup>

In addition to coordinating these designations and the pre-hospital segment of trauma care, EPs can be part of a trauma team, especially in the initial stages where airway management, fluid resuscitation and diagnosis are a priority. As trauma centres were being established in England, the presence of EPs extended the capabilities of the surgical trauma teams.<sup>11</sup>

#### ROLE OF EPs IN EDUCATION AND TRAINING

Emergency physicians play an important role in medical and public education. As shown by the experiences in Vellore, India and Pittsburgh, USA rotations in EDs by medical students and junior residents are more productive when an experienced EP is present to supervise them.<sup>13,14</sup> Emergency physicians can take their place beside cardiologists, paediatricians, critical care specialists and surgeons in the design and dissemination of Basic Life Support (BLS), ACLS, PALS and ATLS to other medical personnel

as well as to lay people.<sup>15</sup> Because of their experience with trauma victims, EPs are often medical spokespeople for accident prevention and help to formulate national policies for injury prevention. Promotion of helmet and seat belt use are some current examples.

In conjunction with public safety organizations, EPs help design disaster plans. To best meet the challenge of a mass casualty occurrence, plans must be in place incorporating police, medical, fire, ambulance and often military personnel. These plans must be carefully designed, practised and revised. The way a hospital deals with multiple casualties is similar to the way EDs and EPs normally function. Triage and coordination of resources, as well as pre-hospital care, are crucial to disaster management. Since these processes are central to EM, EPs are well suited for disaster planning.

Another service that this specialty could provide is research geared towards EM practices. Clinical research is crucial to improving medical care, but it is also context dependent. Research done in an intensive care unit or an operating theatre may not be applicable to the ED or pre-hospital setting.<sup>16</sup> Not surprisingly, a review of the Indian medical literature reveals a relative paucity of studies on EM. Ideally, research should be done by EPs in EDs in India.

#### EVOLUTION OF EMERGENCY MEDICINE IN THE USA

In the USA, EM was established as a distinct specialty relatively recently, and is not yet an academic department at most medical schools.<sup>17</sup> The development of American EM has been encouraged by several historic factors, including twentieth century military trauma experiences, an epidemic of RTAs, as well as advances in the care of emergent medical illnesses, particularly coronary artery disease.

In 1949, Gordon argued that injuries were disease-like and helped to extend the science of epidemiology to accidents and their prevention, thus in a sense, medicalizing trauma.<sup>18</sup> Since then, the proliferation of automobiles have made RTAs one of the leading causes of morbidity and mortality in the USA. Growing public awareness of this problem as well as a 1966 report by the National Academy of Sciences, 'Accidental Death and Disability: The Neglected Disease of Modern Society',<sup>19</sup> led the US government to pass laws and direct funds toward improving emergency medical services (EMS).

The National Academy of Sciences report describing the condition of EMS systems in the USA before 1966 reads like a description of Indian EMS today: lack of training specific to emergencies (ACLS, ATLS); lack of medical training for ambulance drivers; inadequate and incomplete supplies in ambulances and in EDs were among the highlighted insufficiencies.<sup>20</sup> Although their emphasis was on pre-hospital care, the Academy also documented the inadequate training of physicians, nurses and other staff in American hospitals, that were ill-prepared to treat accident victims. Various government initiatives as well as private foundations attempted to solve these problems by promoting the development of what would eventually become EM.

Surgical experiences in Korea and Vietnam helped to form an approach to the management of trauma, which was remarkable not only for the surgical techniques, but perhaps more importantly for the emphasis on a systematic approach to the challenges of multiple casualties with varying acuity. This approach has greatly influenced peacetime trauma care as well as EM in general, and traces of it can be found in ACLS, PALS and ATLS.<sup>18,20-22</sup>

In the same year that the National Academy released its report, the Emergency Highway Safety Act threatened states with the loss

of highway construction funds unless they improved their pre-hospital systems.<sup>20</sup> In 1973, The EMS Act established standards and provided funding to meet them. Hospitals were designated sites for emergency care as well as for the training of pre-hospital personnel such as emergency medical technicians (EMTs) and paramedics. It was in this environment and with the help of federal and foundation grants that physicians who had been practising *de facto* EM began to establish the first training programmes for EPs in the USA.

The politics of recognizing EM as a specialty in the USA are complicated and beyond the scope of this article. Suffice it to say that there was resistance from the established specialties, which have been slow to accept EPs as equals in the medical hierarchy.<sup>21,23</sup> One of the most effective arguments toward establishing the specialty was the efficiency of having one doctor who could see all types of patients.<sup>24,25</sup> Another was the need to provide medical radio control and management for the burgeoning pre-hospital systems. Furthermore, the EMS Act made it mandatory that a licensed physician should staff the ED 24 hours a day, and many states began to institute the requirement that EDs be supervised by emergency specialists.

The American College of Emergency Physicians (ACEP) was formed in 1968, and the first residency training programme in EM in the USA was established in 1970 at the University of Cincinnati. In 1975, the American Medical Association defined the EP as trained to engage in:

1. The immediate, initial recognition, evaluation, care and disposal of patients with acute illness and injury;
2. The administration, research and teaching of all aspects of emergency medical care;
3. The direction of the patient to sources of follow up care, in or out of the hospital as may be required;
4. The provision when requested of emergency, but not continuing, care to inpatients; and
5. The management of emergency medical systems for the provision of pre-hospital care.<sup>25</sup>

The American Board of Emergency Medicine (ABEM), which was incorporated in 1976, developed the standards of board certification for graduates of EM residencies and organized and regulated the process by which the many doctors who were already working in EDs around the country could become certified. Unlike some other specialties, all of them were required to take the certifying examination, which currently consists of written and oral sections.<sup>23</sup> The specialty of EM was officially recognized and accepted by the American Medical Association and the American Board of Medical Specialties in 1979, and given primary board status in 1989.<sup>23</sup> The curriculum for EM trainees, which is structured by the ACEP, ABEM, as well as a national residency review committee, has evolved from 2 years to 3-4 years of postgraduate training.<sup>26</sup> Currently, EM is one of the more sought after specialties by medical school graduates in the USA. There are 136 programmes nationwide with a total of 1157 newly board-eligible EPs graduating each year.<sup>23,26</sup>

#### WILL EMERGENCY MEDICINE COME OF AGE IN INDIA?

Interest in the specialty of EM in India is growing rapidly. The formation of the Indian Society for Emergency Medicine is an important step. The Society held its third annual conference in May 2001. There are a number of unaccredited EM training programmes at hospitals committed to high-quality patient care in India, including the Christian Medical College at Vellore, St

John's Medical College at Bangalore, Apollo Hospital at Hyderabad, and Sundaram Medical Foundation at Chennai.<sup>1,3,5,27</sup> These programmes are modelled on EM training in the USA, Australia, England and elsewhere.<sup>19,28</sup> Important differences exist in EM training around the world. A comparison of the American and British models may be useful.<sup>29</sup> In Europe, anaesthesiology and critical care are common partners.<sup>27,30</sup> In the USA and UK, EM is often a separate department or a division of internal medicine or general surgery. Further research and planning are needed to determine the optimal form of EM training and practice in India.

Efficiency and patient satisfaction improve when EDs are staffed by doctors well qualified to work in them. Injury prevention, disaster planning and pre-hospital care are in real need of improvement in India.<sup>1,21,27</sup> The development of EM will promote these important public health issues. Patients deserve consistent high-quality care when they go to a hospital with an emergency. Patient care in India will benefit greatly if EM is formally recognized as a specialty and accredited postgraduate training programmes are instituted. We are hopeful that bodies such as the Medical Council of India and National Board of Examinations will spearhead these initiatives.

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