



White Paper on Academic Emergency Medicine in India: INDO-US Joint Working Group (JWG)

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Abstract

Emergency Medicine (EM) is a new discipline for India. As Medical Council of India (MCI) makes progress in recognizing the need to develop EM residency training programs in India it is important that there exist an established training model for future faculty, residents and medical students. This INDO-US white paper makes a serious attempt to recognize the opportunities and challenges in developing academic emergency medicine in India. The contents of this white paper address the overall scenario and are not targeted towards a person, physician, body, hospital or any other associated entity. This paper emphasizes the importance of MCI recognized training in Emergency Medicine for physicians in India. ©

INTRODUCTION

Emergency Medicine (EM) is a new academic discipline in its infancy in India. Dedicated Emergency Medicine faculty will be key to developing a national skilled emergency care workforce. At present there is no Medical Council of India accredited residency program. Organized Medicine is paramount in this development of a new medical discipline in India. High volume emergency departments of Medical College hospitals are ideal sites for the initial development of Emergency Medicine teachers. This white paper will discuss the current state of EM in India with foundational suggestions based on the Academic Emergency Medicine Model practiced in the United States.

Current Status of Emergency Care in India

Emergencies and accidents are commonplace in all parts of India. Though India is a developing country, due to rapid economic growth and urbanization, it faces the ills of both an under-developed as well as developed economy. Everyday, India faces the dual challenges posed by emergencies related to infections and communicable diseases and those related to chronic diseases and trauma. About 20% of all emergency-related visits are related to trauma.¹ Adding to the burden of cardiac diseases is a growing road traffic crash incidents. The World Health Organization (WHO) has

projected that by 2020 road crashes will be a major killer in India, accounting for 546,000 deaths.³ Current statistics indicate that cardiac diseases and stroke will be a major cause of death and disability in 2020.²

Despite the obvious need for emergency care as witnessed by these horrifying figures, the world's worst industrial accident in Bhopal in 1994, and a spate of natural and man-made disasters and terrorist acts, the state of emergency medical services in India remains very poor.

Pre-hospital Care in India

India lacks a responsive and time-sensitive Emergency Medical System (EMS). City services are run by a multitude of organizations including government, police, fire brigades, hospitals and private agencies,¹ with little coordination among them. Private hospital ambulances operate on a strictly fee-for-service basis. Air ambulance services are not widely available. In rural areas, patients are often transported to a health care centre in tractor carts or bullock carts.

India lacks a countrywide uniform ambulance number. Each agency has their own emergency number; in Delhi, the Centralized Accident and Trauma Service (CATS) provides the ambulance services via two numbers (102 and 1099), and in Andhra Pradesh, the ambulance system is run by the Emergency Management and Research Institute (EMRI), accessed by telephone number 108.

Ambulances are often little more than transport vehicles. They may contain a bed and an oxygen tank. Personnel with minimal or no medical training staff these vehicles. This absence of training standards for paramedics allows unskilled labor to attempt life-saving tasks. Thirty per cent of emergency patients in India die before they reach a hospital. Over 80% of accident victims do not achieve access to

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medical care within one hour of the incident.⁴ Ambulances are often used more for inter-hospital transports and non-emergency calls.

Without the use of ambulances, bystanders usually perform prehospital care, including patient transport. One study found that only 2% of patients were transported to the ED by ambulances.⁵ Bystander care often involves a scoop-and-run approach utilizing the nearest available vehicle large enough to accommodate the patient. Transport of an injured patient to a hospital may take up to an hour, with the most convenient form of transportation being a taxi. Due to a lack of any categorization of hospitals, emergency victims are often taken to the nearest facility, regardless of its capabilities to treat that particular emergency. The strategic principle of “the right patient to the right hospital in the shortest time” is generally not followed, as there is no communication between ambulance staff and various hospitals. National or regional guidelines for triage, patient-delivery decisions, and pre-hospital treatment plans do not exist.

Hospital Based Emergency Care in the Government Sector in India

Definitive care for victims with emergencies is offered by government hospitals, corporate hospitals, and a large number of small clinics. Government hospitals generally offer free care, but the quality of that care differs between centers. Most university hospitals provide a reasonable level of emergency care. District hospitals often lack trained staff, adequate infrastructure, and supply of consumables.¹ Triage is rarely practiced. As a result, impressive but non-life threatening extremity trauma may take precedence over bacterial meningitis or myocardial infarction.

There are no dedicated trauma surgeons and very few designated trauma centers in India. Orthopedic surgeons lead the trauma response in 50% of facilities.⁶ In the remainder; the responsibility is not clearly defined. In the absence of defined roles amongst specialists, clinical decisions are often delayed. Multi-system injury patients are at the greatest risk.

Typically, most of the “emergency care” in the hospitals in India is provided in areas known as Casualty or Accident rooms. Formal education and specialty training in emergency care are neither available nor mandatory for personnel involved in emergency care. These Casualty/Accident room physicians lack any specific training in emergency medicine.¹ Proceedings have only recently been initiated to recognize Emergency medicine as a distinct medical discipline. Residents posted in these ‘rooms’ often rotate from various specialties such as surgery, orthopedics, and medicine and have little commitment towards patient management. These physicians are often waiting to retake the All India Entrance Examination in the hope of securing a postgraduate position in established fields recognized by the MCI.⁷ In some hospitals, emergency rooms (ERs) are traditionally divided into separately run medical and surgical teams. With this division it becomes very difficult

to deliver quality, cost-effective care. In many hospitals, physicians staffing the emergency rooms lack the resources and knowledge to manage the wide variety of emergencies. They therefore function as ‘postal carriers’ who ‘deliver’ victims to the respective specialties. The most junior and inexperienced staff frequently treat the most seriously injured patients.

Hospital Based Emergency Care in the Private Sector in India

Private and corporate hospitals, located mostly in large cities, are equipped with modern diagnostic and imaging facilities, but are generally staffed by inexperienced doctors. These hospitals offer services on a fee-paying basis, including emergency care. Payment for laboratory tests, procedures, and physician consultations is required before services are rendered. Patients who are unable to pay are directed to a government hospital. In critical situations, a private hospital may perform initial stabilization, but then families must decide whether to pay for further services or transport the patient to a government hospital. The physicians in these hospitals often do not possess special training or qualification in emergency medicine. They are able to handle minor illnesses and injuries, but for serious emergencies they rely heavily on specialists-on-call from other departments.

In the past several years small hospitals and clinics have rapidly developed across India. These sites also lack multidisciplinary support and trained emergency physicians.

Emergency Care in Rural India

The healthcare delivery system in rural areas progresses from a sub center to a primary health center to a community health center. Privately run small clinics and hospitals also administer to the rural population. General practitioners, whose skills and abilities range from very basic to highly competent, perform the emergency medical care in these areas. The vast majority of rural emergency physicians are not trained in any specific specialty. Rural physicians face many obstacles including long distances and terrain, lack of EMS providers and communication, lack of diagnostic modalities, and lack of availability of medical specialists. Despite less workforce and fewer resources than their urban counterparts, many of these physicians deliver reasonably good emergency care.

Disasters and Emergency Care in India

Several disasters – both natural and manmade- occur every year in India. These include cyclones, floods, earthquakes, tsunamis, landslides, droughts, and terrorist attacks.

Prehospital care is again nearly non-existent. During disasters, several (both governmental and non-governmental) agencies come forward to provide emergency medical care. This response often lacks coordination and communication between agencies and hospitals. Lack of coordination and agency control often negatively impact the distribution

of care. In hospitals, chaos often prevails during disasters, as there is no unifying commander in charge. Frequent political, media and diplomatic visitors further complicate the scenario of post disaster security and management.

Many hospitals have disaster plans yet do not perform regular drills to test preparedness. In a survey, only 26% of the systems reported a well-documented disaster management plan,⁶ the rest of the systems have plans under development or no plan. This deficiency results in increased number of deaths in natural disasters. In 1999, there was an increase of 20.8% in fatalities due to such disasters compared to previous year.⁸

Academic Model for Emergency Training in United States

The academic model for Emergency Training in the United States addresses training for both medical students and residents. Post residency fellowship training is also available.

Emergency Medicine Residency Training in USA^{9,10}

In the United States, the Accreditation Council for Graduate Medical Education (ACGME) and the Residency Review Committee (RRC) for Emergency Medicine govern training in Emergency Medicine (EM). Residencies in EM are predominately three years in length, and are designed to prepare physicians for the every day practice of EM. Residents are trained under qualified faculty to develop clinical maturity, judgment, technical skills, and a knowledge base in the fundamentals of EM. Basic areas of expertise for an emergency physician (EP) include resuscitation, airway management, supervision of pre-hospital systems, and the provision of care ranging from initial to definitive for the complete spectrum of medical illness, poisoning, and injury in all age groups.

Residency programs are primarily based at a single institution. The institution must exemplify dedication to graduate medical education (GME) as evidenced by the presence of training programs in several other major specialties in addition to EM, and through the creation of an atmosphere conducive to, and dedicated to learning. Program Directors (PD) must have specific qualifications, and have the authority and means to ensure the successful management of the residency program. The PD must be active clinically in the full time practice of EM. Responsibilities of the PD include the development and oversight of didactic and clinical education, resident selection, approval of program faculty selection, resident supervision, resident monitoring, and compliance with all accreditation requirements. A PD must demonstrate leadership qualities and the capability to mentor residents.

US work rules for residents state that they should work no more than 80 hours a week, and no more than 60 hours a week when in the ED. They are responsible for attending a majority of didactic sessions, and must maintain a record of patient encounters, especially in regards to major resuscitations and procedures.

Faculty must be fully qualified and involved in the full

time practice of EM, and be able to devote a sufficient amount of time to teaching and scholarly activity. They are responsible for maintaining an educational environment for the development of the residents' abilities. Ideally, when sufficient numbers of EM specialty trained physicians exist, all EM faculty should be residency trained in emergency medicine and certified within the specialty. Failing this, they should be involved in post-graduate educational programs dedicated to the expansion of their knowledge base and further development of their clinical skills in EM. This type of experience should include reading, didactics, and procedural skills training.

The institutions where training takes place must ensure the availability of adequate resources for resident education. This includes adequate space for patient care, clinical support services, timely laboratory and diagnostic imaging, program support space, and security services.

The minimum suggested size for a training program is 6 residents per year of training, or 18 total. There must be one teaching faculty member for every three residents.

Requirements for the clinical experience leave sufficient room for individual programs to create their own identity, but there are also very specific mandates. At least 50% of the training should take place in the emergency department under the supervision of EPs. Each resident should have the equivalent of at least 4 months dedicated to the care of infants and children, and at least 2 months of this must be in an emergency setting. At least two months of inpatient critical care rotations is expected. A significant portion of the patients treated in the ED by residents should qualify as critically ill or injured, with admittance rates to an ICU, OR, or morgue of 3% or 1200 patients per year, whichever is greater. Residents must have experience in pre-hospital care. Trainees must have significant opportunities to perform invasive procedures and direct major resuscitations, to include both medical and traumatic cases in all age groups. Residents in EM are expected to be able to prioritize and stabilize multiple patients while simultaneously performing other patient care responsibilities.

The emergency department sponsoring the training of emergency medicine residents should be on an equal status with all other departments within the hospital. The chair of the department must be involved in the full time practice of emergency medicine, and should have positions of responsibility within the administrative structure of the hospital.

Trauma care is a critical portion of emergency medicine residency training. Residents must be capable of caring for the spectrum of trauma from minor injuries to major resuscitations, for all age groups. Emergency physicians should form the base of any trauma care system. Specific to India, training in trauma should occur at major trauma receiving facilities. Ideally, these facilities would have emergency departments that provide the setting for the initial evaluation and resuscitation of the trauma patient, involving both emergency physicians and trauma

surgeons.

Textbooks of emergency medicine provide a critical resource for the acquisition of the medical knowledge required to practice EM. Examples are the Tintinalli and the Rosen textbooks of Emergency Medicine. Residency training should include assigned reading and testing from one of these sources.

There are several recognized sub-specialty areas of expertise and fellowship training within the specialty of EM. These include pre-hospital care, or Emergency Medical Services (EMS), toxicology, disaster medicine, and pediatric emergency care. The EP is uniquely qualified through the every day practice of his or her specialty to be the experts in these fields.

US Model for Training Medical Students in Emergency Medicine¹¹

Society expects all physicians to have the ability to identify and treat emergencies. The US Liaison Committee on Medical Education has stated that competency in the care of acutely ill and injured patient is one of the fundamental exit goals of medical school. The medical student's goal on a rotation is to enrich his or her knowledge, hone clinical skills, and develop a caring, compassionate, and empathetic attitude in dealing with patients and their families. Emergency Medicine rotations have a multifaceted approach to student education. Teaching the essentials of Emergency Medicine includes integrating clinical skills and evidence-based medicine through didactic lectures, observation, performance of clinical procedures, hands on clinical experiences and direct interaction with faculty, individual patients, and families. The students learn essential emergency medicine procedures as well as their indications, contraindications, and potential complications. An Emergency Medicine medical student rotation is designed to introduce students to emergency medicine with all its unique opportunities and challenges, provide the student with basic life support skills, and an exposure to assessing the undifferentiated patient. With the attending emergency physician, students are expected to evaluate patients, address their presenting complaints, initiate workups, and provide definitive therapies. Often the most critically ill patients are managed using the "team approach," which involves emergency medical technicians, nurses, physicians, and students.

Typical goals for a student rotation:

Medical Knowledge : Students will demonstrate a basic level of competency of history, physical examination, procedural, and problem-solving skills required to adequately assess and manage the spectrum of disease processes seen in Emergency Medicine.

Practice Based Learning and Improvement : Students will practice evidence-based medicine.

Interpersonal and Communication Skills : Students will establish effective and ethically sound relationships with patients, faculty, staff, and peers to provide quality health

care.

Professionalism : Students will respect and be sensitive to the individuality, values, goals, concerns, and rights of all with whom they interact in the healthcare setting.

Systems-Based Practice : Students will effectively integrate ancillary healthcare resources and appropriately utilize business systems for optimal care of their patients.

Essential Procedures in Emergency Medicine : Teach essential emergency medicine procedures, including indications, contraindications, and potential complications. These procedures include phlebotomy, intravenous access, arterial puncture, electrocardiogram, tonometry, central venous access, basic and advanced airway management, suturing, cricothyroidotomy, tube thoracostomy, emergency thoracotomy, and trauma FAST ultrasound exam.

Academic Model for Emergency Training in India

The Medical Council of India is initiating the recognition of post graduation education in the discipline of Emergency Medicine. There is proposal of having a three-year training program leading to a MD in Emergency Medicine soon after the MBBS. There currently exist some postgraduate programs in universities which award a MD in Emergency Medicine in India. There are also some private hospitals, which offer indigenous diplomas, certificates and fellowships in Emergency Medicine. None of these are recognized by the Medical Council of India.

The role of Medical council of India (MCI) is paramount to recognizing a new specialty. Significant constraints exist such as a lack of structured curriculum, trained faculty, and infrastructure in training institutions. The rising patient volume in emergency departments across the country reemphasizes the importance of developing Emergency Medicine programs leading to a MD in this discipline. MCI recognized government medical colleges with their diverse and high volume patient populations are the ideal sites to initiate EM residencies in India. Faculty of various disciplines such as Medicine, Surgery, Orthopedics, Obstetrics and Gynecology and Pediatrics should be recruited for the developing EM residency. Faculty should be afforded the time to devote to personal learning as well as resident training. Key to faculty development will be onsite programs with a minimum of one year of didactics and clinical experience in a high volume Emergency Department (ED) and international collaboration for faculty exchange program and distance learning by telemedicine technology.

The accredited programs will develop specific residency rotations and predefined aims and learning objectives. A recommended educational foundation for the program is as follows:

Suggested Core content of the residency program can cover but not restricted to :

- Administration
- Neurosciences
- Anesthesia
- Obstetrics/Gynecology

- Cardiology
- Critical Care
- Dermatology
- Emergency Medicine Services
- Environmental Illness
- Ethics
- General Medicine
- General Surgery
- Geriatrics
- Infectious Disease
- Ophthalmology
- Orthopedics
- Otolaryngology
- Pediatrics
- Psychiatry
- Research
- Resuscitation
- Toxicology
- Trauma
- Urology
- Wound Management

The curriculum may be directed towards India specific areas such as a toxicology curriculum focused on regionally specific bites and stings and poisoning. Infectious disease emergencies should have tropical perspective.

The rotation for three years of training can be in a one-month blocks with preset goals and objectives (Table 1).

For example during the ANESTHESIA rotation the goals can be

1. Develop airway management skills
2. Develop familiarity with pharmacologic agents used in rapid sequence intubation
3. Learn standard monitoring techniques
4. Learn relevant pre-operative historical and physical exam considerations
5. Learn principles of pain management.

Residents should also rotate through trauma critical care units, trauma surgery wards, and orthopedic trauma units. Pediatric exposure should include the pediatric emergency department and the pediatric intensive care unit. Protocol based resuscitation skills such as advanced cardiac life support, pediatric advanced life support, and emergency procedures are vital components of training. Prehospital care, disaster management, and EM administrative are additional important areas of study. Residents should learn how to perform emergency based collaborative research and complete a research project under faculty mentorship.

The evaluation and feedback component of any program will be key to its graduate medical education integrity. Evaluations and focused feedback are recommended after each rotation. The evaluations methods can be in the form of written tests, oral tests, procedure and patient log book completion, laboratory and procedures skills stations, and case simulations.

A joint effort by all MCI recognized Medical Colleges as well as the many deemed universities across India are required to achieve the full emergence of academic emergency medicine in India.

Resuscitation Training in India

Resuscitation is a critical component of Emergency

Table 1 : Rotation schedule for emergency medicine residents over a three-year training period

PGY 1 (In Months)	PGY 2 (In Months)	PGY 3 (In Months)
EM (3)	EM (5)	EM (8) (w/Peds EM interspersed)
Peds PEM (1)	Peds PEM (1)	Elective (1)
Anesthesia (2 weeks)	Toxicology (1)	Trauma (1)
Ophthalmology (2 weeks)	Psychiatry (1)	Administration (2 weeks)
OB/Gyn (1)	PICU (1)	Radiology and Ultrasound (2 weeks)
Orthopedics (1)	MICU (1)	Research (1)
Neurosurgery (1)	Cardiology (1)	
General Medicine (1)	EMS (1)	
CCU (1)		
MICU (1)		
Trauma Surgery (1)		

EM=Emergency Medicine, PEM=Pediatric Emergency Medicine
 PICU=Pediatric ICU, MICU= Medical ICU, CCU= Cardiac ICU, EMS= Pre-Hospital Emergency Medical Services

Medicine. In the US, an EM resident maybe certified in Cardiac, Trauma, Stroke, Pediatric, and Neonatal specific resuscitation courses. Organized Medicine bodies and Research Institutions such as the American Heart Association, American College of Surgeons, and American Association of Pediatrics support these courses. The United States mandates certification of physicians and nurses in Advanced Cardiac Life Support (ACLS) some time in their career, irrespective of their specialty. Additionally, pediatricians complete courses in Pediatric and Neonatal Life support. Surgeons complete a course in advanced trauma life support. These certifications expires every two to four years. Instructor status training is also available for interested physicians.

In India, ACLS courses are offered by only a handful of institutions. As this course is an American Heart Association Course, many of the people who pursue the certificate interpret this as a completion of a degree. India does not have standardized courses for resuscitation training, hence the misdirection or misrepresentation of the certificate of completion. This has lead to commercial utilization and marketing of resuscitation courses endorsed by agencies from different countries across the globe.

There is a significant misconception in India regarding resuscitation education being the complete body of knowledge in emergency medicine and trauma. Resuscitation Training is a important but small component of the body of knowledge and skills in Emergency Medicine and Trauma. It does not fulfill itself to be complete body of knowledge for obtaining the science of emergency and trauma care expertise. Resuscitation training covers the early minutes of handling life-threatening conditions, but many other sub acute and non-acute conditions also exist. Isolated resuscitation training does not create Trauma Experts or Emergency Physicians. It will be very

beneficial and cost effective if the Medical Council of India recognizes the additional need to have a separate section for resuscitation training in medical and surgical disciplines for Indian health care providers.

Developing Training and Caring Models for Trauma Care and Injury Science in India

In India, health is a state subject, yet no state has any legislation to address the issue of trauma comparable to, for example, "The Washington Emergency Medical Services and Trauma Act of 1990". This Act defined that a trauma care system is one, which delivers the "right" patient to the "right" facility in the "right" amount of time. In addition, the statute called for the integration of injury prevention programs in the development of the trauma system. The magnitude and menace of trauma in India can be gauged by the fact that one person dies every 6 minutes on Indian roads. The rate is expected to be more than 1 every 3 minutes by 2020.¹² In 2005, 4.5 lakh accidents occurred and 94,928 people died. Moreover, the financial cost of road traffic injuries in direct and indirect socio economic losses amounts to Rs. 55000 crore (550 b) or 3% of GDP. Trauma victims occupy 10-30% of India's hospital beds.¹³ A strategy for integrated, coordinated trauma care and injury prevention activities must be developed in India. Gujarat has become the first state to pass legislation addressing emergency medical services.

Trauma care in India is primarily provided by urban based teaching, non-teaching and corporate hospitals. These resources are not integrated into a trauma care system. The trauma victims unable to pay for their care in private hospitals are often dumped in the Government hospitals. A review examining the existing trauma care and working of casualty departments of Indian hospitals at different levels found many gaps.¹⁴ Deficiencies in trauma care include lack of skilled human resources, infrastructure, equipment and supplies, and the process of organization and delivery. Although individual trauma centers have developed in both the public and private sector, lack of evaluative and quality assurance mechanisms obscure their impact. Recent studies and an extensive review of the literature illustrate a nearly 15%–30% reduction in deaths in different parts of the world due to better organization of overall trauma care at different levels.^{15,16}

Acknowledging the public health importance of injuries in the society, the Health Ministry has agreed to develop an integral network of trauma care facilities across the country in general, and along the National Highways in particular. The Health Ministry and National Highway Authority of India (NHAI) have constructed a comprehensive plan for developing prehospital ambulance services to save the lives of those who survive the initial impact of injuries. A recent study in Bangalore¹⁶ revealed that those who were provided first aid at or near the injury site, transported early to a definitive hospital for management, reaching a definitive hospital directly on their own or after the first medical contact, had better survival and outcome. The

Central Government Planning Commission 17 has identified trauma care services as an important area for growth and development during the Tenth Plan period. The report acknowledges, "there are no organized comprehensive trauma care services either at the Centre or State level." What this report further highlights is the need and importance of the emergency medicine specialty. Emphasis during this period will be toward adequate training of medical and paramedical personnel, provision of facilities for transport of patients, suitable strengthening of existing emergency and casualty services, and improving referral linkages. The development of emergency medicine augments the development of the trauma care system.

The Care of trauma victims after resuscitation should be provided by trained Trauma Surgeons who would have completed Trauma surgery and trauma critical care training in addition to completing a residency in General surgery. Orthopedic Surgeons will gain equivalent training in orthopedic trauma after completing an orthopedic residency. The body of knowledge and the academic model for trauma surgery and orthopedic trauma surgery should be defined and recognized by the Medical Council of India. The details for the same are not covered within the body of knowledge of Emergency Medicine. Emergency Physicians provide initial resuscitation and management of trauma patients in partnership with Trauma Surgeons in busy trauma centers and hospitals. During the course of residency training an emergency resident will resuscitate trauma patients in the emergency department. In addition the residents will rotate through the trauma surgery wards, orthopedic wards and surgical intensive care units for a month each. This exposure provides expertise in managing patients with various trauma mechanisms such as motor vehicle crashes, burns, falls, electrocutions, gunshots, blunt and orthopedic injuries.

Disaster Training Curriculum for India

Emergency Medicine (EM) Departments are the front line for the community during a disaster. A disaster is defined as that time, when the need for staff, supplies and space exceed resources due to an extraordinary stress on a community, e.g. earthquake, biological outbreak or terrorist attack. As a result, Disaster Medicine has been, and continues to be, an important focus for Emergency Medicine. The Emergency Department (ED) is the place to train, set standards for response, and create a culture of preparedness not only for the Hospital but the community as well.

The role of faculty, residents, and students becomes magnified during the time of crisis which is brought on by a disaster. Without prior planning and training, lives are lost, morbidity increases, and resources become scarcer creating insurmountable obstacles. If an institution and community have good planning in place then there is less loss of life and fewer resources are wasted. With planning and partnership from hospital administration and community leaders some of these stresses can be addressed and mitigated. Better public health in the time of extraordinary circumstances

is possible with well-trained and prepared physicians on the front line. This interface between the event and the hospital takes place in the emergency department. As the Emergency Department heads the Hospital's Committee on Disaster Preparedness by establishing protocols, conducting training, and facilitating exercises, they also create the opportunity for a good relationship between the hospital administration and the community. This proactive involvement validates the EM program and creates added value for those involved: physicians, residents, and students, thus improving better patient care.

The disaster curriculum is an integral part of the over all EM training program. The graduate from a Disaster Fellowship will be able to create a Hazard Vulnerability Analysis (HVA). The HVA is the first part and the foundation of, disaster planning. The ED physician will have a thorough understanding of the mechanisms of action and threats to the public health as a result of chemical events both intentional and accidental. The ED physician recognizes the appropriate decontamination and treatment of victims. Identifying biological threats, either naturally occurring or as an intentional act of terrorism, is a vital step in disaster medicine. Because the ED physician is trained to recognize the route of dissemination, as well as the nature of the spread of epidemics and pandemics, the public is better served. Since the ED is the front line for the treatment of most biological agents a working knowledge of the category "A" agents as defined by World Health Organization (WHO), as well as an understanding of WHO's outbreak tracking, mitigation, and responses is also necessary. The ED physician also has a good understanding of radiologic and nuclear threats and the proper treatment of exposed patients and staff as well as the facility.

Emergency Medical services in the United States¹⁹⁻²⁴

Since the early 1970s, Emergency Medical Services (EMS) and Emergency Medical Service Systems have evolved in the United States as a means to reduce morbidity and mortality due to life-threatening/disabling injuries and acute medical illnesses.

The field of EMS derives its origins from the related fields of public health, health care systems administration, public safety, and medicine. Effectiveness of this system requires coordination among all of these professional disciplines. EMS in the US has become a distinctive entity, with an ever-evolving scientific knowledge base unique to this multi-disciplinary field. The delivery of emergency health care requires participation of many independent organizations and individuals, including physicians, hospitals, ambulance services, and other public service entities. Although they are autonomous providers, these participants have a high degree of functional interdependence as they provide care to individual patients. Managing this system requires planning, standards, and adjustment by all participants. Ignoring this interdependence can result in conflicts between providers, inefficient utilization of resources, and, in the end, poor patient care.

Legislative authority for EMS agencies and EMS systems resides at the state level. Standards and Guidelines are provided on a state-by-state basis to guide local EMS agencies in planning, organization, management, and evaluation of their own system, and in their integration and performance in regional systems of care. Many states also provide EMS system implementation resources in the form of directories, benchmarks, and other educational materials.

An EMS system provides immediate assistance in a sudden, unanticipated medical event. In tracing an individual patient through the EMS system, five stages can be seen:

- Pre-response : Initial access to the system and first aid and cardiopulmonary resuscitation performed by members of the public prior to the arrival of any official responder.
- Prehospital : Fire, law enforcement and other public safety "first responder" agencies and basic and advanced life support ambulances.
- Hospital : Emergency department and secondary-level in-patient hospital care.
- Critical Care : Intensive and cardiac care as provided in most community level hospitals and tertiary-level care for the treatment of the most severe patients within each of the clinical target groups.
- Rehabilitation : Services necessary to return the victim of an emergency illness or accident to a productive place in society.

Not all of the participants in these stages are involved with patients during the emergent phase of their illnesses, and they may not be under the regulatory control of EMS organizations.

EMS systems focus on the following functional components:

1. Workforce
2. Training
3. Communications
4. Transportation
5. Facilities
6. Critical care units
7. Public safety agencies
8. Consumer participation
9. Access to care
10. Patient transfer
11. Coordinated patient recordkeeping
12. Public information and education
13. Review and evaluation
14. Disaster linkage
15. Mutual aid.

These functional components must be in place for an

EMS agency to provide patient care.

Appropriate resource allocation requires an organized approach to patient access, and efficient and effective communications. The dispatch center for an EMS service must invest time and resources into providing this crucial link. Most US states now require standardized dispatching protocols. These provide rapid telephone interrogation, while deploying the resources appropriate to each emergency.

Workforce and training are dependent on the mission of the agency. While some services may provide Prehospital and critical care interfacility transport, other agencies may fulfill a more narrowly defined mission. Transport services that reside in the public service sector may wish to limit their mission to provision of scene work, and will not need the training or expertise their critical care interfacility counterparts need for patient care. In general, Prehospital care providers in the United States are trained Emergency Medical Technicians (EMT) at either the Basic EMT level, or the more advanced Paramedic EMT level. National standards for EMT Basic and EMT-Paramedic initial education exist. EMT-Basic and EMT-Paramedic personnel operate under the license of a Medical Director physician.

Transportation vehicles vary from small golf cart size vehicles, to large specially equipped trucks, watercraft, and aircraft. Although aircraft are very expensive to obtain and maintain, within a systems approach, aircraft provide rapid transportation to a higher level of care. They can also reduce the redundancy of tertiary services at low volume hospitals, and allow initiation of time urgent interventions in far away locations.

In routine patient response, the first person on the scene is often law enforcement or other public service personnel. The minimum standard of training for these individuals is defined as "first responder training" in the United States. This training includes very basic patient assessment and stabilization techniques, as well as detailed operational and communication. Most states require that EMS agencies participate in educating the first responding public.

Public and private sector participants have been involved in comprehensive EMS system planning and implementation. Thus a coordinated, comprehensive response to an individual, or a mass casualty, is possible.

Pre-hospital Care education in India

India is seeing a surge in enthusiasm towards developing Emergency Medical Services (EMS), an essential component of Emergency Medicine. EMS broadly covers areas of patient rescue, diagnosis, transport and field resuscitation and stabilization. Many private hospitals have started certificate and fellowship courses in paramedic training, but there is no formal course or regulating body supervising the development of paramedic training programs in India looking at the US model.

Academic Leadership in Emergency Medicine

For Emergency Medicine to progress in India academic

institutions must commit to creating free standing departments of Emergency medicine, with dedicated faculty focused on cultivating a career in Emergency Medicine. This faculty, initially arising from diverse medical fields, can initiate their faculty development by sharing the acute care knowledge from their individual fields. Once this is accomplished, a formal application to the Medical Council of India can be made to start a postgraduate program in Emergency Medicine. The department of Emergency Medicine can then develop its own research projects and strategies to foster the institutional growth of this science. These departments and experts can coalesce and organize to promote this branch in India.

The INDO-US Academic Council for Emergency and Trauma, established in 2006, is a Leadership incubator for Emergency Medicine across Medical Colleges in India. All MCI recognized medical colleges are invited to be a part of the council. Each college is represented by their Dean or a Nominated Faculty who carry the vision of advancing Emergency Medicine at the institution they represent. These members meet regularly, collaborate with MCI, and attend many national and international workshops on emergency medicine skills development. Many of the medical colleges currently have Departments or Divisions of Emergency Medicine.

In India, the development of a new medical science will originate from MCI recognized academic training institutions. For years the practice of Emergency Medicine in India has been restricted to the Defense Sector with fully functioning command hospitals with paramedics, nurses, and physicians trained in Emergency Care. There are many initiatives to involve National Board of Examinations (NBE) to recognize Emergency Medicine Residency Training as a Speciality. This will be in addition to having MCI recognized Residency training programs at medical colleges in India. Formal approval by the MCI of India and the enthusiastic support from the leadership at Medical Colleges will deliver the expertise and enterprise for developing Academic Emergency Medicine in India.

INDO-US JOINT WORKING GROUP (JWG) RESOLUTION-2007

Under the leadership of the Dean, Indian College of Physicians, experts from India and the US formed a Joint Working Group. This group set the foundation for suggesting an educational model for Emergency Medicine Training in India. A resolution has been published below.

Mission:

To foster the exchange of knowledge leading to the advancement of academic Emergency Medicine in India in the areas of

1. Developing Specialty Residency Training.
2. Creating Residency Accreditation Guidelines.
3. Promoting Academic awareness for best practice models for Emergency Care in India.

4. Standardizing pre-hospital and hospital emergency care across India in all sectors.
5. Foster Academic Research in Emergency Medicine and Trauma in India

Vision:

In the next twenty years a majority of physicians providing emergency care will be residency trained and specialty certified in EM in India.

Objectives:

1. Sustain and grow the existing technical academic partnership in the INDO-US program for Emergency Medicine and Trauma.
2. Establish and maintain the Academic Council for Emergency Medicine and Trauma.
3. Conduct annual Emergency Medicine academic meetings to provide a platform for the development of an academic society of practicing emergency physicians in India and the United States.
4. Increase interest in an Emergency Medicine Residency and develop a residency certification process.
5. Develop and implement prehospital and hospital standards of care in Emergency Medicine and Trauma.
6. Develop protocols and educational products to train nurses and paramedics involved in providing emergency care.
7. Foster research and development in the fields of basic and clinical science related to areas of Trauma and Emergency Medicine.
8. Work on integrating newer technologies such as Simulation, Sonography and Information Technology into academic models of education, research, and care in Emergency Medicine.

CONCLUSIONS

These deficiencies in emergency care cannot be mitigated overnight. The strides India is making in emergency and trauma care is encouraging, but will require a concerted effort by society and the medical community to achieve the goal of providing excellent emergency care to all. With India around the billion population mark, trained emergency physicians and trauma surgeons will be key to decreasing the morbidity and mortality of India's citizens. Emergency Physicians and Trauma Surgeons gain their expertise through rigorous training and education. India must promote the development of Emergency Departments in her medical colleges followed by the growth of specific residency training in Emergency Medicine. Medical Education is the cornerstone for building the health of a nation.

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Announcement

2nd National Conference on HIV/AIDS Therapy Current Practices and Future Options 2009 Mumbai

Human Healthcare and Research Foundation in collaboration with Center for Clinical Global Health Education, Johns Hopkins School of Medicine and various Medical Universities is organising a National Conference on "Recent advances in comprehensive care of HIV for long term survival".

President: DG Saple, Exe. President & Scientific Co- Chair: Alaka Deshpande, Scientific Chair: Amita Gupta

Venue: Hotel Grand Hyatt, Mumbai, India.

Date: 10th & 11th Jan. 2009

For Registration: www.hhrfonline.com

Secretariat: Human Healthcare & Research Foundation, 88, Hindu Colony, 3rd Lane, Dadar (E),
Mumbai 400014.

Tel: +9122 24143895, Fax: +9122 24124039 Email: info@hhrfonline.com, Website: www.hhrfonline.com

Announcement

A conference on "Inflammatory Bowel Disease: Problem-Oriented Approach" will be held at the P D Hinduja National Hospital, Mumbai 400 016, November 8 and 9, 2008.

For details, contact: Dr. Devendra Desai, Room 1106, Clinic Building, P D Hinduja National Hospital, Mahim, Mumbai 400 016.

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