Quality Emergency Medical Care in India: Challanges & Opportunities

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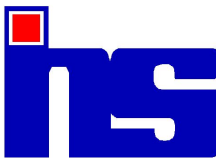

THE INSTITUTE OF HEALTH SYSTEMS

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Introduction

Compared to better established emergency medical care systems (EMS) in developed countries, EHS in India is still in its nascent stage. Though there were early attempts to lay down guidelines for the development of Emergency Medical Care in India by the Rao Committee (1968) and the Sidhu Committee (1979), this component of health care continued to be neglected for a long time. Given the dominance of an unregulated private health sector governed almost entirely by the whims of the market and the overwhelming emphasis on vertical programmes for communicable disease control and family welfare in the public sector, it is perhaps not surprising that the emergency medical care was not accorded much priority in the country.

Fortunately, recent developments indicate that provision of emergency care services may receive better attention than earlier. In its landmark judgment, the Supreme Court of India (Paschim Banga Khet Mazdoor Samity and others v. State of West Bengal and another, 1996) ruled that the failure to provide timely medical treatment to a person in need of such treatment results in a violation of his/her "right to life" guaranteed under Article 21 of the constitution. Public health and social activists have amplified their campaign for effective implementation of this fundamental right (CEHAT, 2005). 'The National Public Hearing on the Right to Health Care' organized by the National Human Rights Commission (NHRC) and the Jana Swasthya Abhiyan (JSA) at New Delhi on 16 and 17 December 2004, emphasized that people's access to emergency medical care is an important facet of right to health. (NHRC, 2004).

The National Health Policy 2002 has highlighted the increasing burden of disease due to accidents and envisaged setting up of trauma care centres and fully-equipped 'hub-spoke' trauma care networks in urban areas of the country (GOI, 2002). The public health agenda of international organizations and donor agencies which has a significant influence on national policy, has in the recent years recognized the need for strengthening provision of emergency medical services in South Asian Countries (World Bank, 1996; Razzak and Kellerman, 2002; Gove, 1997; Joshipura and others, 2002).

At the professional level, the emergence of emergency medicine as a recognized academic specialty in developed countries and international collaborations in this area has fostered increasing interest in emergency care among clinicians in developing countries like India (Joshipura and others, 2002). The Society for Emergency Medicine, India was established in 1999. The American Academy for Emergency Medicine in India (AAEMI), an

organization dedicated to promoting emergency medicine in India, was launched in February 2001 by a US based group of Emergency Medicine specialists of Indian descent. The Apollo Hospitals group hosted an “Emergency Update” for General Practitioners in the community on February 10th 2002, with active participation of AAEMI at Hyderabad. The highlight of the session was the official launch of India’s first universal emergency access number, 1066. The first ever International Conference on Emergency Medicine in India was organized by Society for Emergency Medicine, at Hyderabad from 25 to 27 October 2002. Obviously these are indications that policy makers, social activists and health care professionals have taken cognizance of the need to improve emergency care in the country. This paper seeks to review the current status of EMS in India and the challenges that need to be overcome to move towards establishing quality emergency services in India.

Emergency Medical Care

A medical emergency is an unforeseen injury or illness (physiological or psychological) requiring immediate medical care. The individual may be in danger of loss of life or health impairment, or may be incapacitated or helpless as a result of a physical or mental condition. Emergency medical care focuses on the provision of immediate or urgent medical interventions to stabilize such patients and prevent death and disability.

Time is one of the most important factors relating to patient outcome in emergency situations. In general, irreversible brain damage from an acute heart attack starts within four to six minutes of when the heart stops pumping and the patient stops breathing. Getting help to the patient within this time frame is therefore critical. In a study of out-of-hospital cardiac arrests, it was found that when victims were not resuscitated before arrival at the hospital, long-term survival was unlikely. Patients' records indicate that the only characteristic associated with improved outcome was a resuscitation time of less than 15 minutes (Division of Fire and Rescue Services, Montgomery, 1997). About 50 percent of road traffic deaths happen within 15 minutes of the accident as a result of injuries to the brain, heart, and large blood vessels. A further 35 percent die in the next 1-2 hours of head and chest injuries, and 15 percent over the next 30 days from sepsis and organ failure. The time between injury and initial stabilization is the single most important factor in patient survival, with the first 30- 60 minutes being the most important (ADB, 1998).

Although there may be a diversity in application, there is general agreement on the principles of effective emergency medical care. The aim of any efficient emergency medical care will be to:

1. ensure early detection of medical emergency, immediate institution of First Aid and possible resuscitation
2. fast & safe transportation of the casualty to the appropriate Emergency Medical department of a hospital and
3. the subsequent provision of more definitive treatment (ADB, 1998).

Need for Developing Quality Emergency Medical Care: A Burden of Disease Perspective

India is currently in the midst of an economic and demographic transition. Increasing life expectancy and urbanization with accompanying lifestyle changes have lead to an epidemiological transition, as evidenced by the increasing incidence of cardiovascular and cerebrovascular diseases, diabetes, COPD etc. At the same time communicable diseases such as acute respiratory infections, acute diarrhoeal diseases, Tuberculosis, Malaria etc., continue to account for a substantial burden of disease in the country. Unintentional injuries due to road traffic accidents, fires, falls etc., and Intentional injuries such as self inflicted injuries and those due to violence also constitute a significant burden of disease in the country. Many of these conditions require emergency care in their acute stages (diabetic hypoglycemia, septicemia, premature labour, asthma), or are acute in their natural presentation (such as myocardial infarction, acute haemorrhage and injuries) (Joshipura and others, 2002).

Most injuries, whether intentional or not, require emergency care. Injuries are the single highest cause of disability-adjusted life-years (DALYs) lost in India (Murray and Lopez, 1996). A survey of Road Traffic Accidents in India shows that there is a vehicular accident every three minutes and death every ten minutes and in addition other trauma related deaths occur every second minute. Road Traffic Accidents which is currently the ninth leading cause of mortality, is expected to be the third major cause of death in the country by 2020 (WHO, 2001). Much of the high maternal mortality rate of over 400 per 100,000 (IIPS & ORC Macro, 2000), in the country is constituted by causes that could have been mitigated by quality emergency obstetric care (Table-1).

Table-1: Percentage of Maternal Deaths by Causes in India

Specific causes	1985	1990	1995	1997	1998
Bleeding of Pregnancy & Puerperium	15.9	23.7	28.9	27.6	29.6
Abortion	23.1	19.4	17	17.3	19
Anaemia	13.9	8.1	8.5	13	16.1
Toxaemia	7.7	7.1	4	10.7	9.5
Puerperal sepsis	11.5	11.8	17.6	7.3	8.9
Malposition of child	6.7	15.2	9.9	6.6	8.3
Not classifiable	21.2	14.7	14.1	17.5	8.6

Source: SRS, Registrar General of India

While it may be difficult to quantify the number of lives or DALYs saved through emergency medical care, it is evident that many of the conditions that contribute to the burden of disease in India can be mitigated through prompt treatment (Table 2 and Table-3).

Table: 2- Leading Causes of Deaths in India

Cause of death	% of total deaths
Lower respiratory infections	12.8
Ischaemic heart disease	12.5
Diarrhoeal diseases	9.8
Tuberculosis	8.0
Perinatal conditions	7.0
Unintentional Injuries	6.9
Cerebrovascular disease	4.8
Intentional Injuries	1.7
Cirrhosis of the liver	1.6
Chronic obstructive pulmonary disease	1.5

Source: Murray and Lopez, 1996

Table 3: Leading Causes of Disability Adjusted Life Years (DALYS) in India

Causes of DALYS	% of Total DALYS
Unintentional Injuries	13.0
Lower respiratory infections	11.9
Diarrhoeal diseases	10.2
Perinatal conditions	8.8
Tuberculosis	4.8
Ischaemic heart disease	3.5
Congenital anomalies	2.9
Unipolar depressive disorder	2.8
Measles	2.5
Tetanus	2.4
Intentional Injuries	1.5
Cerebrovascular disease	1.5

Source: Murray and Lopez, 1996

Emergency Medical Care Systems

An examination of the practice of emergency medicine in various parts of the world indicate that developed countries generally have more formal organized emergency care systems and developing countries have more informal systems. While the emergency care system is quite unique in each country, there are common features that is shared by certain countries. Broadly, emergency care in developed countries can be categorized into two- The Anglo-American and the Franco-German system. Sakr and Wardrope (2000) highlighted the key features of these systems.

Anglo-American System

This is practiced in UK, USA, Ireland, Australia, New Zealand, Canada, Japan, Taiwan, South Korea, and Israel. In these countries after provision of immediate first aid and emergency care at the scene of the incident, the patient is transported to the hospital as fast as possible. The care of emergency patients is provided by specially trained hospital based doctors who deliver a wide range of services for all patients presenting to a separate emergency department. Emergency medicine in these countries is a recognized independent specialty with professional associations. There is a structured training programme for trainees, and recognized qualifications.

Franco-German System

This is practiced mainly in Germany, France, and other European countries including Russia. In these countries well equipped vehicles carry skilled doctors to the scene. Emergency medicine is not a recognized specialty and most doctors practicing emergency medicine are from specialties such as anaesthesia, surgery, and medicine. In this model the initial resuscitation is delivered by anaesthetist; which is followed by direct triage to a specialty.

Informal Systems

Such systems are found in many countries in the Asian and Pacific region, including India. Generally there is no organized ambulance service nor emergency medicine departments. Patients are brought to the nearest hospital by relatives, bystanders or passing motorists using whatever transport is available, usually without any treatment or first aid at the scene. Emergency medicine is generally not a recognized specialty and in countries like India, such services are provided in "Casualty Centres" staffed by physicians who have no postgraduate qualifications. Ambulances are mostly privately owned and operate on a fee for service base.

The above systems have been distinguished on the basis of core components of

emergency health care- on site, pre-hospital and intra-hospital care. However from a systems perspective the emergency health care system is an integral part of the health care system and the wider social, economic, cultural, political, legal and technological systems in the country.

Quality Emergency Medical Care in India: Challenges and Opportunities

Quality of health care concepts emerge from our understanding of goals of health care. The primary goals of any health care service include: improvement of health of the population, responsiveness to felt needs of the people and financial protection against costs of ill-health (WHO, 2000). Health would include survival and quality of life. Responsiveness is about the interpersonal aspects of care. It refers to client orientation and respect for persons. The health enhancing aspects of care has been referred to as technical quality of health care, and the responsiveness dimension has been referred to as interpersonal quality of care (Newbrander and Rosenthal, 1997). Financial protection refers to equity aspect of the health system. Newbrander and Rosenthal refer to similar aspects of health care as the social aspect of quality, for example, efficiency and access. Evidently, quality of care is a multidimensional concept consisting of objective and subjective elements. Hence quality of care is inferred from a variety of sources. In this section we discuss some of the key elements that has a bearing on the quality of emergency health care in India.

Access to Health Care

Quality of Emergency Care is to a large extent, reflective of the overall performance of the health sector. It is universally accepted that the functioning of the public health sector in India is far from satisfactory. The National Health Policy, 2002, states that;
"It would detract from the quality of the exercise if, while framing a new policy, it is not acknowledged that the existing public health infrastructure is far from satisfactory. For the out-door medical facilities in existence, funding is generally insufficient; the presence of medical and para-medical personnel is often much less than required by the prescribed norms; the availability of consumables is frequently negligible; the equipment in many public hospitals is often obsolescent and unusable; and the buildings are in a dilapidated state. In the in-door treatment facilities, again, the equipment is often obsolescent; the availability of essential drugs is minimal; the capacity of the facilities is grossly inadequate, which leads to over-crowding, and consequentially to a steep deterioration in the quality of the services" (GOI, 2002).

The health care system is inequitable with marked disparities in access to health care, particularly related to location, socioeconomic status and gender of the population. Over 66% of hospitals and 77% of the hospital beds are located in urban areas. Rural areas have 0.77

hospitals, 1.37 dispensaries, 3.2 PHCs and 44 beds per lakh population, while urban areas have 4.48 hospitals, 6.16 dispensaries and 308 beds per lakh population (GOI, 2002). The urban-rural disparity is more evident when one considers that more than 70% of the Indian population resides in urban areas (GOI, 2001). In 2001 of all registered hospitals 72.52% were in the private sector and 27.47% in the public sector (GOI, 2002). The private health sector accounts for over 70% of all primary care, which is sought, and over 50% of all hospital care (GOI, 1998). This is not a very healthy sign for a country in which three-fourth of the population lives at or below subsistence (CEHAT, 2005). Given the above characteristics of the Indian health care system, it is not surprising that there is a gross disparity in emergency care delivered to paying and non-paying populations and between urban and rural settings of the country (Joshipura and others, 2003).

In recent years there has been some efforts by central and state governments to improve access to emergency care in the country. Provision of Emergency Obstetric and New Born Care Services through PHCs and first referral units has received much attention under the RCH programme (GOI, 2000, GoTN, 2005). The Central government has initiated a scheme to enhance and upgrade the accident and emergency services in select State government hospitals falling in the accident-prone areas of the national highways. Under the Sanjivani scheme to provide emergency health care in times of disaster, the central government has acquired container based mobile hospitals, which can be transported by rail, road or by air and be set up at or near the disaster site at short notice. Once installed, it would be a hospital with 200 beds with operation theatre and diagnostic facilities including CT scan. (GOI, 2004). The First Referral Health Systems Project being implemented with support of the World Bank in states such as AP, Maharashtra, Orissa, Punjab etc., aims to improve emergency medical services as a key component of the overall health programme. State government initiatives to ensure 24 hour availability of staff[1] and provision of telephones at PHCs[2] are bound to improve access and quality of emergency care at PHCs. There has also been some efforts by Apollo Group of Hospitals in the private sector, Delhi Metropolitan Corporation in the public sector, the Neurological Association of Bangalore in the nonprofit sector (See Box-2) etc., to improve on the site and pre-hospital emergency care (GoD, 2001, Vijaya, 2003). Air ambulance services are also available for paying patients in other parts of the country (Mehra, 2001). While these initiatives appear promising, majority of the

[1]GO Ms. No.98 on 06-04-02. Department of Health Medical and Family Welfare, Government of AP

[2]Memo No. 7848/D1/2002-1. Department of Health Medical and Family Welfare, Government of AP

population, especially in rural and remote areas of the country do not have access to emergency care due to lack of pre-hospital emergency care and transport, limited hospital resources, and an absence of integrated and organized emergency care systems.

There is general agreement among public health experts that some capacity for emergency care should exist at every level of the health care system (Razzak and Kellerman, 2002). However in India, there is a gross lack of resources to manage the range of emergency clinical problems that are encountered on daily basis, at every level (PoSaw and others, 1998). Mahapatra and Berman (1994) observed that about 40% of first referral public hospitals (secondary level hospitals) in Andhra Pradesh did not provide any kind of emergency service. Findings of a recent study in Andhra Pradesh reveal that health care institutions fare poorly even for the most basic indicators of accessibility of emergency health care such as connectivity by telephone, availability of ambulance services and 24 hour emergency services (Table 4).

Table-4: Availability of auxiliary services for Emergency Care in AP in 2000 (H = hospitals)

↓ Service	Private				Public			
	Clinics	Small H	Big H	All	PHCs	Small H	Big H	All
n →	71	69	10	150	53	41	12	1106
Telephone	79%	96%	100%	88%	6%	41%	92%	29%
Ambulance	6%	23%	80%	19%	26%	34%	92%	37%
Blood Bank	0%	6%	60%	7%	0%	0%	33%	4%
24 Hour Em Ser	11%	67%	80%	41%	25%	59%	67%	42%

Source: Mahapatra, Sridhar and Rajashri (2001)

In the year 2000, only 6% of the PHCs in AP had a telephone facility and three fourths of the PHCs did not have ambulance service or 24 hour emergency services. The poor accessibility of PHCs is reflected in their very low utilization rates. PHCs account for only about 2% of the ailments requiring any kind of out-patient treatment (GOI, 1998). Such a scenario has significant implications for the delivery of emergency care in the country. PHCs can serve as the point of first contact for initial evaluation and management of pediatric, maternal, trauma and medical patients with urgent problems. With proper training in the principles of triage and emergency stabilization, and a simple kit of essential equipment and supplies, the staff will be able to handle most problems on site and assist in appropriate referral to a hospital, if required. The involvement of primary health care centres in the provision of emergency medical care can ensure services to a wider population at low cost and reduce the risk of referral hospitals being overwhelmed by non emergency cases (Razzak and Kellerman, 2002). Therefore a key challenge is to strengthen emergency care at the PHC level, institute appropriate referral mechanisms and equip secondary and tertiary levels of

care for timely management of cases referred from lower levels.

Financing of Emergency Care

Traditionally health care in India, particularly emergency care has not received much priority in allocation of public funds. Public spending on health care in India is as low as 0.9% of the Gross Domestic Product (GDP) in contrast to a total health expenditure of 5% of GDP (Duggal, 2004). Consequently, the people of the country incur a very high burden of out-of-pocket expenditure on health care (Chakroborty, 2003). Results from a household survey in AP indicate that about 70% of the households below poverty line had to either sell their assets or borrow money, often at high rates of interest to meet hospitalization expenses (IHSG, 2003). Given the epidemiological profile of the country, one would infer that a significant part of the financial burden of ill health would be on account of diseases and conditions requiring emergency care. Individuals and families are therefore forced to chose between risk of impoverishment and indebtedness because of medical expenses or risk death or disability attributable to a lack of emergency care (Razzak and Kellerman, 2002).

Substantial investments are required to improve access and quality of emergency care in India. Low level of public spending is a constraint for development of emergency care services. More so, because such services are not a priority for private sector as it is capital intensive and has low margins of profit (Dutta, 2003). Diverting funds from the already meager public sector allocation for emergency care is not a feasible option, as it will be at the cost of other important components of health care. Therefore investments in emergency care will primarily be dependent on increased public sector spending on health care. The NHP 2002 acknowledges that the public health investment in the country has been comparatively low and plans to raise it to 2 percent of GDP by 2010 (GOI, 2002). However even this level of spending is much lower than the 5% GDP recommended by the World Health Organization (CEHAT, 2005). Thus alternate mechanisms of financing emergency care must also be explored. Encouraging voluntary health insurance coverage may be an option, but such schemes are not accessible to the poor. Improving the purchasing power of poor families by means of subsidized insurance plans could be a more effective way to improve emergency care (Mc Cord 2001). Experiments of community financing mechanisms by SEWA and SSY Ratlam appear to hold promise in offering financial protection to the poor while accessing emergency care (Mahapatra and Reddy, 2003). Such innovative financing mechanisms have to evaluated and considered for implementation elsewhere in the country.

Policy, Standards and Legislation

India is yet to develop any national program for development of practice guidelines,

medical review criteria, and other standards for any type of health care. The NHP 2002 envisages enactment of suitable legislation for regulating minimum infrastructure and quality standards in clinical establishments/medical institutions by 2003 (GOI, 2002). However this recommendation has not yet been implemented. There is hardly any regulatory framework for quality assurance in health sector (Bhatt, 1997). Standards are not prescribed nor are being enforced either through legislation, byelaws or professional organisations/associations. State or municipal laws for licensing of hospitals exist only in a few states. These are (a) the Bombay Nursing Home Registration Act, 1949; (b) the Delhi Nursing Homes Registration Act, 1953; and (c) the Karnataka Private Nursing Homes Act, 1976. However, implementation is lacking in most of these places (Nandaraj, 1998, 1999). While public hospitals follow some norms and standards in provision of health care as defined in hospital manuals and government regulations the private sector has no such binding and operates completely unregulated. Unlike their counterparts in the developed world, professional associations in India have not given much priority for self-regulation to ensure a standard level of health care provisions (CEHAT, 2005).

In recent years there has been some isolated efforts to develop standards for quality care. The AP Vaidya Vidhana Parishad, which manages the first referral public hospitals in Andhra Pradesh has developed quite a few standards and is making efforts to implement them (Srilatha, 1998). In the state of Gujarat, the state department of health, the Gujarat sub-country office of the WHO, representatives of IATSIC/ISS, local professional groups and several non-government organizations came together to adapt the WHO Guidelines for Emergency Trauma Care to local circumstances (WHO and IATSIC, 2003). The Bureau of Indian Standards has developed some structural and process standards in the area of health care, including:

1. Classification and matrix for various categories of hospitals (IS12377-1988).
2. Basic requirement for hospital planning (IS 12433-1988).
3. Quality management procedures for outpatient department (OPD) and other emergency services - guidelines (IS13808-1993).
4. Quality management procedures for diagnostic and blood transfusion service - guidelines (IS13809-1993).

Some voluntary efforts have been made to develop structural standards for health care institutions. The Institute of Health Systems has developed some standards for reproductive health care services (IHS, 1998). The Centre for Enquiry into Health and Allied Themes (CEHAT) in Mumbai has developed certain physical standards for private health care

institutions based on case studies in Maharashtra (Nandaraj and Duggal, 1997).

The above efforts for development of standards and quality assurance system are a positive development. At least some capacity appears to exist. But a sustained country or state wide healthcare quality assurance system is yet to develop. Establishing clear goals, standards, policies, and protocols to respond to the specific needs and limitations of the local environment, is a key requirement for improving quality and accessibility of emergency care. Development of such standards and enactment of required legislation to enforce them is a major challenge. Sayah (2005) discusses some of these standards, which includes:

1. Patient care protocol standards: They define an acceptable, standardized approach to each commonly encountered patient problem. Treatment protocols describe the authority and responsibility of emergency care teams and provide guidance for medical education and care.
2. Time standards: Goals are set to optimize response time, on-scene time, and transport time for both emergency and non-emergency services without reducing the quality of services provided. Other time standards may include, but are not limited to, (1) the amount of time required to access the system, (2) dispatch time, (3) medical intervention time, and (4) the amount of time it takes for crews to return back into service.
3. Procedural standards: These standards describe the circumstances indicated to perform a particular procedure. Specifics of the procedure are communicated, such as how, where, and when to do a procedure and the amount of time required to perform it. Expected results, adverse effects, alternative approaches, and possible complications are described within the procedural standards.
4. Equipment standards: These standards prescribe type of equipment, its intended use, schedule for maintenance etc.
5. Performance standards: These are minimum standards that all employees must meet while performing their duties. They include areas of clinical competency, adherence to protocols and policies, personal behavior and general professionalism.
6. Educational standards: Minimum requirements for initial training, testing, and continuing education to meet the expectations and requirements of the local emergency care system.
7. Standards for categorization of hospitals in a geographically demarcated area based on available facilities. (Box-1)

Box-1: Categorization of Hospitals by Type of Available Emergency Care Facilities

Category V support unit: Should be able to render Basic Life Support- maintain airway, IV transfusion except blood, pleural & pericardial drainage, immobilization of fractures, controlling bleeding & cardiac arrhythmias, positive pressure artificial ventilation primary wound care and chemo prophylaxis.
Category IV support unit: Basic Emergency Support – Cat V facilities plus other amenities like availability of physician within 15 minutes; Anesthetist, Surgeon, Obstetrician & Pediatrician in 20 minutes and other specialists on phone call.
Category III support unit: General Emergency Support – Cat IV facilities plus round the clock availability of physician and Blood Bank.
Category II support unit: Major Emergency Support – Cat III facilities plus Resuscitation of all cases and specific treatment to most cases.
Category I support unit: Comprehensive Emergency Support – Cat II facilities plus immediate complete and advanced care to all the casualties.
Source: Boyd and others

Human Resources for Emergency Care

The lack of adequately trained personnel at all levels, is a critical lacunae in the Indian health care system. The Government of India - Planning Commission Steering Committee on development of human resources for health (Bajaj et al, 1997) identified inadequate knowledge and skills because of inadequate training in specific areas, as a key factor contributing to poor quality care and patient dissatisfaction. The lopsided development of the health care system has resulted in concentration of available health professionals in urban areas, leading to acute shortage of health human power in rural areas, especially in the public sector (Table 5). Lack of medical and supporting paramedical staff at PHC level and specialists in basic disciplines such as surgery, anesthesia, medicine, pediatrics, obstetrics and gynecology at the first referral level, is a constraint in provision of emergency care, particularly in rural areas. Therefore ensuring adequate availability of appropriate health human power at all levels is key to development of emergency care systems in the country.

Table 5: Public Sector Health Manpower in Rural Areas of India, 2001

Category	Required	Shortfall	% Short fall
PHC doctors	22842	2310	10.11
Specialists*	12172	7459	61.28
Pharmacists	25885	6678	25.80
Lab Technicians	25885	12661	48.91
Nurse	44143	20842	47.21
MPW (female)	160153	24382	15.22
MPW (male)	137311	66902	48.72
Health Asst (male)	22842	5452	23.87
Health Asst (female)	22842	3889	17.03
Total	474075	150575	31.76

Source, GOI, 2002
Note: * Surgeons, Gynaecologists, Physicians & Pediatricians

Education and training of professional care providers is necessary to reinforce proper patient care, update the provider regarding newer treatment modalities and equipment, and remedy perceived deficiencies. A survey of emergency medicine in 36 countries gave India a very poor ranking for its academic systems pertaining to emergency care. Compared to other developed and developing countries in 1999, India did not have; a national organization for emergency medicine, recognition of emergency medicine as an independent medical specialty, board certification or credentialing for emergency care personnel nor residency training programmes or fellowship programmes in emergency medical care (Arnold and others, 2001). Since then a national Society for Emergency Medicine has been established in the country and there has been some efforts to build capacity in emergency medical care. The expert group on emergency medical care constituted by the National Human Rights Commission has recommended that Emergency Medicine be recognized as a medical specialty and that training in EMS be organized in medical colleges (NHRC, 2004). The Apollo Hospital Educational and Research Foundation offers a 5 month certificate programme in Emergency Medicine and conducts CME programmes in this area for medical graduates. The Academy of Traumatology, Ahmedabad has introduced the National Trauma Management Course (NTMC), National Disaster Preparedness Course for Hospitals (NDPCH), and the Basic and Advanced Cardiac Life Support course (BLS and ACLS) in India. In addition to training of health professionals, there has been some efforts to build capacity among the first responders such as police, firemen etc., volunteers and the community to respond to medical emergencies (Dutta, 2003).

Though these initiatives have provided some impetus for developing capacity for emergency care, they are inadequate to meet the manpower requirements of a country like India. As a result we find that most of the critical emergency rooms continue to be manned by untrained professionals (Syed, 2005). Sustained efforts are required to incorporate emergency care in the graduate medical curriculum, development of postgraduate emergency medicine courses and training of paramedical staff, volunteers and first responders. Formal recognition of emergency medicine as an academic medical specialty by the Medical Council of India has the potential to provide a significant boost in development of a skilled workforce and creation of a strong advocacy group for continuous improvement in the system (Joshipura and others, 2004).

Research and Evaluation

Research is required to provide a sound evidence base for charting the course of

development of the emergency care system. While research is a core component of established emergency care systems in developed countries, in India, not much attention has been cast in this direction. A lack of research means that the magnitude of the problem, its impacts and the costs and effectiveness of intervention are not fully understood. In addition to the low priority accorded to emergency care, poorly developed surveillance systems, lack of trained researchers and paucity of research funds are some of the key constraints in furthering research in emergency care (Hofmann and others, 2005).

Causes and consequences of medical emergencies vary from country to country. Therefore a research agenda that focuses on tailoring prevention, treatment and rehabilitation strategies according to local needs is required. Such research will inform policymakers, improve clinical practice, contribute to advances in knowledge and help evaluation and monitoring of individual components of the emergency care system. There is a critical need to focus research on key areas such as: epidemiology, prevention, health service management, basic sciences for developing low cost technology, policy and ethical considerations in management of emergencies (Hofmann and others, 2005).

Coordination and Collaboration

Delivering quality emergency care requires coordination within the various levels of the health sector and collaboration with multiple governmental, non-governmental and international agencies. The expert group on emergency medical care constituted by the National Human Rights Commission has recommended establishment of a central coordinating, facilitating, monitoring and controlling committee for Emergency Medical Services (EMS) under the aegis of Ministry of Health and Family Welfare and establishment of Centralized Accident and Trauma Services in all districts of all States and various Union Territories along with strengthening infrastructure, pre-hospital care at all government and private hospitals. (NHRC, 2004). Integration of emergency care with other health system components is seen to improve health care for the whole community (Joshipura and others). This requires strengthening of capacity at all levels; clear delineation of responsibility and well established referral systems. Networking of hospitals, enlistment of volunteers and having a centralized response mechanism have been found to improve quality of emergency care in India. Coordination and collaboration with the private and the nonprofit sector can therefore play a significant role in strengthening emergency care systems in the country. Examples of such collaboration in the country include; the Comprehensive Trauma Consortium (CTC) in Bangalore, Pune Heart Brigade, Solapur Heart Brigade, the National Network of Emergency Medicine (NNEM), in Hyderabad, Chennai, Delhi, Madurai, Bilaspur

Karimnagar, Kakinada etc (Dutta, 2003, Vijaya, 2003). Collaborations with reputed international academic and medical centres can pave way for building research and medical care capacity in the country, development of standards and for harnessing global knowledge for local action.

India is one of the most disaster-prone countries in the world, affected by earthquakes, railway accidents, cyclones, floods, extremes of climate as well as chronic hazards of terrorism. The medical response to such disasters would require collaboration with multiple governmental, non-governmental and international agencies. The emergency care system must therefore be linked with the local, regional and state disaster plans. The action plans should include: (1) planning of disaster responses including the different types, identification of hazards, training based on experiences, and provision of public education (2) improving coordination and control (3) maintaining communications assuming infrastructure breakdown (4) maximizing mitigation through standardised evaluations, creation of a legal framework, and recognition of advocacy and public participation and (5) providing resources and knowledge through access to existing therapies, using the media, and increasing decentralisation of hospital inventories (Kotur, 2002).

Box 2: CTC: An example of a collaborative effort to provide emergency care in India

In March 2000, Comprehensive Tauma Consortium, (CTC) came into being as a social and non-profit organization working under the aegis of Bangalore Neurological Society, with the objective "to reach the accident victim at the right time (golden hour), to the right place, by right people using a right method." The need for pre-hospital care by following the three principles – decentralization of trauma care, participation of individuals and reorganizing the existing system for treatment, gave birth to this voluntary organization. It works in close coordination with the local police whose toll free help line number '103' receives all intimations about accidents and alerts the CTC.

Bangalore city was divided into 7 zones and each zone has a designated trauma care hospital. Besides several other hospitals in the zones were designated as 'Area Hospitals' and "First Aid Centers'. All zonal hospitals and the Ambulances are connected through wireless communication with a dedicated frequency. Nine of the ambulances were placed at the hospitals and rest at strategic locations in the city. In addition, CTC has a tie up with Deccan Aviation for air ambulance facility with a helipad at Manipal Hospital. There are plans to have more helipads and to rope in HAL for air ambulances.

CTC has established first aid centers on high ways in association with Suman Motels and plans were afoot to have first aid centers at all the retail outlets of Indian Oil Corporation to ensure one at every 15 – 20 kilometers on high ways. The existing hospitals on highways are enrolled as Satellite Hospitals to provide emergency medical care. Bangalore Trauma Registry is designed to evaluate the system and to guide the system. Plans are also on to procure GPS to enable effective & faster ambulance services.

Source: Vijaya (2003)

Conclusion

India has a high burden of disease due to diseases and conditions that can be mitigated

by prompt emergency care. Traditionally, emergency care has not received much attention due to a variety of reasons, as a result of which emergency care systems in the country are still in its nascent stage. In recent years, there have been some initiatives to improve access and quality of emergency care. While these efforts have played a pioneering role in advancement of emergency care in the country, they are grossly inadequate to meet the current and future requirements. The government has to play a lead role in facilitation of access, financing, development of standards and capacity building for emergency care and ensuring support and collaboration of the multiple stakeholders involved. An approach that is based on the premise that the right to emergency care is enshrined in the fundamental right to life of all citizens, will spur the development of emergency care services in the country and reduce the burden of unnecessary deaths and disability in the country.

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