

Emergency medicine - A great career field for the anaesthesiologist!

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Submitted: 23-Nov-2020

Revised: 17-Dec-2020

Accepted: 05-Jan-2021

Published: 20-Jan-2021

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ABSTRACT

Emergency Medicine (EM) is a fast upcoming medical speciality wherein patients presenting with emergent life-saving medical and surgical problems are managed. Emergency physicians are first-line providers of emergency care. They diagnose important clinical conditions even before completing patient assessment, order investigations, interventions, resuscitation and treatment for life-threatening acute conditions. There are several interesting sub-specialisations of EM like trauma care, disaster medicine, toxicology, ultrasonography, critical care medicine, hyperbaric medicine, etc. In some countries, the speciality of EM is a popular choice among medical students; whereas in some other countries, the speciality is now evolving. In India, the speciality is growing fast; Nonetheless, the National Medical Commission has made the existence of the department of EM compulsory in all medical colleges in India from the session of 2022-23. Anaesthesiologists suit the speciality of EM because they have quick decision making skills and swift reflexes as well as diverse knowledge and skills in the fields of critical care, resuscitation and pain management. This article written by anaesthesiologists working in the field of EM, attempts to guide the postgraduate students wanting to take up a career in EM.

Key words: Anaesthesia, career choice, emergency medicine, physicians, students, trauma centre

Access this article online

Website: www.ijaweb.org

DOI: 10.4103/ija.IJA_1472_20

Quick response code



INTRODUCTION

Imagine a family member with a medical emergency arriving in the emergency department (ED) and being handled by a junior doctor with not much experience in managing such cases! You would never want such a situation for your own family member and surely enough, you would like an emergency physician (EP) to manage.

An EP is an expert who receives patients brought to the hospital ED by ambulance and with his/her knowledge and unique set of skills, diagnoses and treats acute medical and surgical problems. Emergency Medicine (EM) is a young, vibrant speciality with a lot of young, enthusiastic practitioners. One of the fastest and largest growing specialities in clinical medicine, EM is a speciality wherein patients presenting with

undifferentiated symptoms and emergent life-saving problems are addressed first even before completing patient assessment/obtaining a history/formulating a diagnosis.^[1]

MERITS OF EM AS A CAREER OPTION

EPs are most respected considering the challenging nature of their work. They recognise life-threatening

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How to cite this article: Ramesh A, Mehdiratta L, Parimal T, Sahu S, Bajwa SJ. Emergency medicine - A great career field for the anaesthesiologist! Indian J Anaesth 2021;65:61-7.

conditions and appropriately manage them especially in the golden hour without a detailed history/work-up, with whatever little information is available, no previous medical records available and illiterate patients with no idea about drugs and drug intake. One wrong move in the acute management can make a huge difference to the patient's life. As an EP, one has to quickly identify, intervene, investigate, and plan, in an orderly sequence with an obsessive-compulsive nature.^[1]

EM is a very interesting speciality because it includes the acute management of a wide variety of medically and surgically ill patients of all genders and ages, with a mix of diagnostic medicine and therapeutic interventions probably greater than that in any other speciality. Playing the role of multiple specialists like physician, surgeon, obstetrician, orthopaedician and intensivist to the patient directly admitted under him/her in the ED gives the EP the satisfying feeling of a 'complete doctor' or a primary care physician.

Efficiency in patient flow, managing multiple simultaneous patients, co-ordinating prehospital and ED care, focusing the approach to medical problems, speed and efficiency of patient evaluations, efficient use of ancillary personnel, efficient recording and transfer of clinical data adds variety into an EP's activities.

The EM is responsible for training the pre-hospital personnel, and in some countries, EM practitioners may find themselves directly as staff on ambulances, both ground and aeromedical. EM also is the main speciality involved in the planning for, and management of disasters and mass casualty situations, both of which also require close interaction with pre-hospital care.^[2]

An EP has the opportunity to deal with a variety of clinical presentations, has expertise in managing uncertainty, is bound by time for decision making, has the capacity of solving difficult and challenging cases in an uncertain time limit, can play the role of a researcher, teacher and clinician and all this makes EM an intellectually stimulating career choice.^[3]

HOW DO ANAESTHESIOLOGISTS MAKE GOOD EPs AND TRAUMA PHYSICIANS?

Anaesthesiologists understand critical care, resuscitation, regional anaesthesia and pain management. Their diverse knowledge and skills

in these fields allow them to care for medical and surgical emergencies as EPs.^[4] An anaesthesiologist being a unique physician with clinical proficiency and discipline, the ability to work in crisis and 'chaos' times with a sound mind (captain of the ship), capabilities in quick decision-making skills, airway management, use of defibrillators in life-threatening arrhythmias and the ability to interact with all the other medical specialities has most of the qualities required to be the leader in the ED. Any emergency requires airway management at the first step as it is the most critical aspect. Anaesthesiologists inherently are expected to be masters in airway management, and cardiopulmonary resuscitation (CPR) and this lends them a great advantage while managing any kind of emergencies; nevertheless, CPR, trauma-care and critical care are a part of their postgraduate curriculum.

The anaesthesiologist posted in the trauma unit can also be a leader in circulatory resuscitation through accurate placement of intravenous central and peripheral lines and massive transfusion in an effective ratio, optimisation of cerebral and spinal cord perfusion to minimise adverse neurological outcomes associated with trauma and comprehensive pain management.

TRAINING AND TEACHING ASPECTS OF EM

There are well-developed residency training programs for EM in many countries ranging from 1 to 5 years. The Masters in Emergency Medicine (MEM) program is the biggest capacity building partnership program in the world between the Ronald Reagan Institute of Emergency Medicine at George Washington University and other private institutions around the world. The program has a 36-month modular curriculum, monthly exams, formative and summative assessments and an exit exam in the end. There are other structurally different programs like Membership of Royal College of Emergency Medicine (MRCEM) exam, Fellow of Royal College of Emergency Medicine (FRCEM), and Diploma in Emergency Medicine programs offered in the United Kingdom (UK). There are global fellowship opportunities (one year) in EM offered by various prestigious institutions in the United States of America (USA) like Stanford University, John Hopkins University, Yale University, etc. There are several online fellowships too. The training programs in India are for a duration of 3 years. Currently, there are around 36 institutes in India which offer the National Medical Commission (NMC) recognised MD seats in

Table 1: List of colleges in India offering course of MD in Emergency Medicine

No.	Name of Medical College	No. of seats
1.	Sri Venkateswara Institute of Medical Sciences, Tirupati	2
2.	P E S Institute Of Medical Sciences and Research, Kuppam	2
3.	Narayana Medical College, Nellore	2
4.	Gauhati Medical College, Guwahati	4
5.	AIIMS, New Delhi	14
6.	GCS Medical College, Ahmedabad	2
7.	Government Medical College, Surat	2
8.	Medical College, Baroda	1
9.	Smt. N.H.L Municipal Medical College, Ahmedabad	6
10.	B J Medical College, Ahmedabad	4
11.	Shri B M Patil Medical College, Hospital and Research Centre, Vijayapura	3
12.	SDM College of Medical Sciences and Hospital, Dharwad	3
13.	Kasturba Medical College, Manipal	3
14.	JSS Medical College, Mysore	2
15.	JJM Medical College, Davangere	3
16.	MS Ramaiah Medical College, Bangalore	4
17.	KIMS, Bangalore	2
18.	S S Institute of Medical Sciences and Research Centre, Davangere	3
19.	Vydehi Institute Of Medical Sciences and Research Centre, Bangalore	2
20.	St. Johns Medical College, Bangalore	3
21.	Amala Institute of Medical Sciences, Thrissur	2
22.	Government Medical College, Calicut	2
23.	Amrita School of Medicine, Kochi	2
24.	Government Medical College, Pariyaram, Kannur	2
25.	Jubilee Mission Medical College and Research Institute, Thrissur	2
26.	Jawaharlal Nehru Medical College, Sawangi, Wardha	3
27.	Government Medical College, Miraj	2
28.	Bharati Vidyapeeth University Medical College, Pune	3
29.	Dr. D Y Patil Medical College, Hospital and Research Centre, Pune	2
30.	MGM Medical College, Navi Mumbai	5
31.	Padmashree Dr. D.Y. Patil Medical College, Navi Mumbai	3
32.	JIPMER, Puducherry	8
33.	Mahatma Gandhi Medical College and Hospital, Jaipur	2
34.	CMC, Vellore	3
35.	SRMC, Chennai	2
36.	Vinayaka Missions Kirupananda Variyar Medical College, Salem	2
37.	Nizams Institute of Medical Sciences, Hyderabad	2
38.	Kamineni Institute of Medical Sciences, Narketpally	2
39.	AIIMS, Rishikesh	18
40.	Institute of Postgraduate Medical Education and Research, Kolkata	2
41.	Kamineni Academy of Medical Sciences & Research Centre, Hyderabad	3

PES: People's Education Society, AIIMS: All India Institute of Medical Sciences; GCS: Gujarat Cancer Society, NHL: Nathiba Hargovandas Lakhmichand; BJ: Byramjee Jeejeebhoy, BM: Basanagouda Mallanagouda, SDM: Shri Dharmasthala Manjunatheshwara, JSS: Jagadguru Sri Shivarathreeshwara, JJM: Jagadguru Jayadeva Murugarajendra; MS: Mathikere Sampige, KIMS: Kempagowda Institute of Medical Sciences; SS: Shamanur Shivashankarappa, DY: Dnyandeo Yashwantrao; MGM: Mahatma Gandhi Mission, JIPMER: Jawaharlal Institute of Postgraduate Medical Education and Research, CMC: Christian Medical College, SRMC: Sri Ramachandra Medical (College Disclaimer: This list is not comprehensive, some centres may have been added to the list)

EM and 21 private hospitals offering DNB course in EM [Tables 1 and 2].^[5] During the training period, an EM resident spends a majority of time in the hospital casualty area/ED and also participates in pre-hospital care. The resident has clinical rotations in other specialities like anaesthesia, surgery, intensive care, paediatrics, obstetrics, internal medicine, cardiology, trauma, etc., There are further sub-specialities in EM, that a person can get trained, through fellowships,

especially in the USA. These sub-specialities have their own sub-speciality exam certification. They include Paediatric EM, Toxicology, Critical Care, Sports Medicine, Hyperbaric Medicine, Injury Prevention, Emergency Medical Services, Hospice and Palliative Care, Ultrasound, Research, Education, Simulation training, Disaster, Trauma, Administration and Infotechnology. One can log into the website: www.saem.org for these fellowship programs. Only few EM

Table 2: Institutes in India offering DNB in Emergency Medicine

Number	Name of Institute offering DNB in Emergency Medicine	City
1	Government Medical College	Chennai
2	Lourdes Hospital	Kochi
3	Indira Gandhi Institute of Medical	Patna
4	Ananthapuri Hospitals and Research Institute	Thiruvananthapuram
5	Government Medical college	Pudukkottai
6	Fortis Memorial Research Institute	Gurgaon
7	Bangalore Baptist Hospital	Bangalore
8	Manipal Hospital	Bangalore
9	Apollo BGS Hospital	Mysore
10	Government Head Quarters Hospital	Erode
11	Columbia Asia Referral Hospital	Bangalore
12	Sree Gokulam Medical College	Thiruvananthapuram
13	Fortis Hospital	Bangalore
14	Apollo Hospital	Mumbai
15	Shalby Hospital	Ahmedabad
16	Jehangir Hospital	Pune
17	Sarvodaya Hospital	Faridabad
18	Kokilaben Dhirubhai Ambani Hospital	Mumbai
19	Deenanath Mangeshkar Hospital	Pune
20	Sree Gokulam Hospital	Salem
21	Ursala Horsman Memorial Hospital	Kanpur
22	Sir Hurlkondas Narrotumdass Hospital	Mumbai
23	Max Super Specialty Hospital	Vaishali
24	Rajah Muthiah Medical College	Annamalainagar
25	Continental Hospital	Hyderabad
26	Rabindranath Tagore International Institute of Cardiac Sciences	Kolkata
27	Medica Superspecialty Hospital	Kolkata
28	Tirumala Hospital	Vizianagaram
29	Paras HMRI Hospital	Patna

HMRI: Hai Medicare and Research Institute (Disclaimer: This list is not comprehensive, some centres may have been added to the list)

fellowships are recognised by the American Board of Medical Specialities –Sports Medicine, Paediatric EM, Toxicology, Hyperbaric and Undersea Medicine, Hospice and Palliative Medicine. Some universities like Stanford University now offer a new one year fellowship in the sub speciality of ‘Wilderness Medicine’ within EM wherein the trainees are taught to meet the unique challenges that arise in environments isolated from formal medical care (with special foci on hyperbaric and marine medicine, altitude-related illness, tropical and travel medicine, hypothermia, animal envenomations and animal-related infections). In India, the All India Institute Of Medical Sciences (AIIMS) Rishikesh offers a one year fellowship in ‘Toxicology’.

RESEARCH AVENUES

The subject of EM has several research avenues. The topics on which research can be conducted include pre-hospital care which is given more importance abroad and can be given more importance in India, acute management of trauma, acute stroke care, paediatric

emergency management (again an upcoming area), emergency ultrasound, poisoning, disaster management, etc. There are several high impact journals in EM and high quality research related to these topics gets published.

CURRENT STATUS, RECOGNITION, ADVANCEMENTS AND GROWTH OF EM

In India, the subject of EM can grow fast because of the potential life-saving role of an EP in the management of the large number of myocardial infarctions, injuries due to road traffic accidents and communicable diseases.^[6] The general public should recognise the importance of the EPs and treat them with respect; however, in India the people have not yet realised this. During the Mumbai serial bomb blasts, people realised the importance of EM. The Trauma Care Centre at Sion Hospital, Mumbai developed after that event. In India, EM gained official recognition as a speciality from the Medical Council of India (MCI) in 2009. The ‘108’ ambulance launched in 2009 marked the start of a new revolution in emergency medical services. International

collaborative partnership programmes were started in our country to train people in EM. However, the growth of the speciality has had several hiccups. There is a huge gap in EM training in India. Currently, through the MD and DNB training programmes, only 194 EPs are trained correctly per year in India, that too if all the available seats are filled.^[6] Earlier, there were not many qualified teachers with a primary degree in EM to join as faculty in the departments of EM at medical colleges in India. So, postgraduate teachers with a minimum of 10 years teaching experience in the departments of anaesthesiology/general medicine/orthopaedics were made to join this department as faculty. The demand for EM faculty in teaching institutions in India is thus high and the availability of EPs is relatively less; hence, a degree in EM guarantees recruitment as teaching faculty, further promotions and easy climbing up the academic ladder.^[7]

The National Medical Commission (NMC) has recently amended the regulations for annual requirements of annual MBBS admissions, to clearly specify that the department of EM with at least 30 beds shall be mandatory for all medical colleges in India with effect from the academic year 2022–2023 onwards. The NMC has also specified the staff strength and facilities for the EM department.^[8] All this will definitely help to promote the progress of development of the subject of EM in India. Many of the trained EPs from India are being actively recruited in other countries, thus creating a deficiency of trained EPs in India; nevertheless, newer government and private institutes and corporate hospitals in India are now expanding their emergency and trauma services.

JOB OPPORTUNITIES AND TAKING UP EM AS A PERMANENT CAREER

EM is a good choice to choose as a permanent career. The need for EPs is almost everywhere in India and worldwide, so it is easy to get a job as soon as one passes out and this demand increases as one's career grows. The duties of an EP are in the form of continuous shift systems (8 hours) after which one can go home and relax with no more calls for the day with control over and predictability of one's work schedule. However, the shifts can be during different timings in the day and one should be ready to adjust to that. The flexibility of shift work provides family time and times during the day and night for practising burnout-reducing relaxing measures. One can also do a 'locum tenure practice' wherein a person works in clinical shifts at multiple different

facilities. In India, the EM physician can choose teaching in a medical college as a career or choose to become a consultant/specialist in a corporate hospital. EM in most countries, is projected to be an undersupplied speciality for many years, and so there will continue to be many open job opportunities in it.^[2,7] The EM physicians in India and abroad also have opportunities to join the military services. They have opportunities to hold the positions of EMS director, Code Blue Committee Director, EM Quality Consultant, Disaster Management Consultant, Medicolegal Expert, Poison Centre Director, Simulation Centre Faculty, Life Support Courses Faculty, point-of-care ultrasound (POCUS) faculty, consultant in hospitals/'free-standing EDs', 'urgent care centres'(not attached to hospitals).

GLOBAL APPEAL AND ECONOMICAL/FINANCIAL ASPECTS OF EM

Globally, there is a huge demand/scope for EM specialists. Great job opportunities await the EM physician in the UK, Middle-East (Qatar, United Arab Emirates, Saudi Arabia), Australia, USA and on famous cruise-ships. EM is the first/second most popular choice for residency by medical students in the USA because it has a wide range of post-training work options globally and a promising job market currently and in the future; nevertheless our Indian MD degree does not apply in Western and Arabian countries and a MRCEM degree is needed to practice there. In the UK, one can join the National Health Service (NHS) with a MRCEM degree or on a one year contract basis as a part of fellowship programme. An MBBS graduate with one year experience of working in the subject of EM in India can join this fellowship programme. Persons with a degree of MD/diploma in anaesthesia can join training programmes, fellowships, MD programmes in EM and, with their background knowledge of resuscitation, critical care and trauma care, they find the course easy, interesting and do really well in the subject. Even after short- or long-term training and fellowships, anaesthesiologists can easily get places in the EDs of Western and Middle East countries. In Western countries, EPs are considered as one of the five highly paid specialists. The economic and financial aspects of EM are very good as compared to other specialities or nearly equal to anaesthesiology. EPs are paid well (around 4.5-5 lakh Indian currency per month) in Arab countries; as per Western literature, EPs enjoy several financial advantages.^[9-12] In the 2018 Medscape Physician Compensation Report, EM was ranked 13th of 29 specialities, with an average income of \$350,000/annual. EPs generally earn a

total compensation of more than \$200 per hour and sometimes more than \$300 per hour. Also, as compared to other specialities training, most EM training programs are of lesser duration; so, EPs start earning early and are able to pay their educational loans early.

LEGAL ASPECTS OF CARE IN EM

Inadequacy of beds to give timely and appropriate emergency care, delay in laboratory investigations, diagnostic imaging and its reporting, management in the overcrowded and stressful environment of the ED may lead to situations with blames of negligence or litigations against the EP and resultant emotional and economical stress.^[13]

SOCIO-BEHAVIOURAL ASPECTS OF EM

EPs working in EDs have to work with a variety of doctors, caregivers, logistics, patients and outcomes in a high pressure environment.^[14,15] They can exhibit mundane social behaviour as a result of daily interactions or defensive social behaviour. Timely, clear, strategic and coordinated communication strategies can certainly help them.^[13]

ETHICAL ASPECTS OF EM^[16-19]

Ethical reasoning of resuscitation in medical and trauma cases involves the principle of beneficence, non maleficence, autonomy and justice, confidentiality versus privacy, personal integrity, distributive justice, all goals at preservation of life, medical and moral imperatives, restoration of health, relief of suffering and maintenance of function. There is an overlapping between decision-making and law when a patient is treated in the ED. The spirituality and religion of the EPs may influence their relationship with patients and families in crisis. EPs have to be sensitive to beliefs and traditions while treating patients. For an EP, in many situations, it may be difficult to follow ethics and it may be frustrating to accept patients' wrong choice/decisions. In the ED, the EP has to many a times, involve surrogate decision-makers in certain scenarios. EM services personnel may be required to attempt resuscitation when the chance of survival is questionable e.g., decapitation, rigor mortis, decomposition. Conflicts can occur between EPs and intensivists in the context of attempts to save a life; aggressive and abusive behaviour of family members in the EM is also common in this regard.

CHALLENGES AND DIFFICULTIES FACED BY THE EP

The EPs work in highly stressful, low resource, low manpower and ethically sensitive circumstances. They have to maintain competency with newer technologies and keep themselves updated with newer medications. They have to experience distress and frustration when a patient refuses for treatment in a critical situation/withholding and withdrawing treatment and 'do not resuscitate' dilemmas, the stress to deliver the best possible medical care in sudden, agonising and life-threatening conditions, and difficulty in following all the guidelines in mass casualty situations. Maintaining inter-personal relationship with working staff, other physicians and faculty and patients' relatives is another challenge to reckon with.^[20] EPs have to work at midnights, on weekends, holidays and other times when they would like to be at home. This can become frustrating as age advances. Particularly challenging are the circadian rhythm changes, when work-shifts change from days to midnights and back to days. This issue becomes very important as a health threat as the EP ages. However, studies reveal that the rate of EPs leaving the speciality is no higher than other specialities.^[21]

MAJOR CHALLENGES FOR EDS IN INDIA^[22-24]

- Capacity, staffing and technology can have an impact on EM departments. EDs in India have to adopt and follow the principles of disaster management like triage, surge capacity to manage the day and night challenges of lack of beds, caregivers and other resources, proper transfer policy in -and-out of patient in ED to avoid overcrowding and match the needs of our population.
- Accommodating the department of EM will be a great challenge in India as it is a new speciality, especially in an already set hospital with fixed policies. Communication between the EP and the other department specialists involved in patient care is very challenging. Trying to talk to the specialist on the phone or personally explaining the course in ED while discussing treatment or transfer, sharing medical records among different care providers in the ED can improve coordination.
- ED patients come in situations that need urgent care; we often need to consider the patient's financial situation and should have rules and regulations like Emergency Medical Treatment

and Active Labour Act (EMTALA) of USA, and the National Health Service (NHS), UK so that, in India too, nobody should be denied care in emergency and trauma crisis in any hospital.

- In India, the challenges faced by the new EPs will be to establish the ED and emergency services, to start academic and ethical EM teaching and training and to provide an effective and coordinated continuum of care in the ED.

CONCLUSION

To summarise, EM is currently a great career choice with a very wide range of post-residency work options and a potential for a safe job market. EM is more adventurous and exciting than most other specialities.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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