

## Career as a general speciality anaesthesiologist

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### ABSTRACT

The growth in anaesthesia speciality has been contemporaneous with the advancement in surgical techniques. Although various anaesthesia subspecialities have developed over the years, the value of a general speciality anaesthesiologist cannot be undermined as skills and techniques acquired during basic anaesthesia training are major determinants of efficiency of an anaesthesiologist. A general speciality anaesthesiologist performs multiple roles: that of a perioperative physician, intensivist and acute pain management expert. Anaesthesia also offers a multitude of avenues in teaching and research. A successful anaesthesiologist not only requires having good clinical skills but also needs to adhere to basic medical ethics principles. Anaesthesiologists have also been in the forefront in the management of the current COVID pandemic.

**Key words:** Anaesthesiologist, general, perioperative

## INTRODUCTION

Attempts to medically anaesthetise humans for surgical interventions have been experimented since about 4000 BC by civilisations. A new era in anaesthesia dawned after the first public demonstration of modern anaesthesia on 16<sup>th</sup> October 1846, by William T. G. Morton and ever since then the speciality of anaesthesia has grown in leaps and bounds.<sup>[1]</sup> Over the years, advances in surgical techniques have been contemporaneous with the advancement in anaesthesia resulting in development of newer surgical and anaesthesia subspecialities. However, in no way does this undermine the value of the general speciality of anaesthesia because the basic principles of anaesthesia do not change regardless of the anaesthesia subspeciality. An anaesthesiologist who has a profound knowledge of human physiology, pharmacology, perioperative medicine and anaesthetic implications of various diseases can achieve success in any of the anaesthesia subspecialities. Skills and techniques acquired during basic anaesthesia training are major determinants of efficiency of an anaesthesiologist.<sup>[2]</sup>

## SCOPE OF A GENERAL SPECIALITY ANAESTHESIOLOGIST

A general speciality anaesthesiologist gets a wide exposure of a spectrum of cases across specialities such as obstetrics, plastic surgery, orthopaedics, otorhinolaryngology, gastro-intestinal and hepatobiliary surgery, urology, laparoscopic and robotic surgery, each having their own unique anaesthesia concerns that the anaesthesiologist needs to address. In addition to surgical speciality specific anaesthesia concerns, a general speciality anaesthesiologist also deals with a myriad of patients with multiple comorbidities and has proficiency in the perioperative management of such patients.<sup>[3]</sup>

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Transplant anaesthesia especially liver transplant anaesthesia which is among the most exigent surgeries requiring diligent anaesthesia care comes under the purview of general speciality anaesthesiologist at many centres across our country. Furthermore, all centres may not have the availability of speciality anaesthesiologists for conduct of super speciality surgeries like vascular surgery, neurosurgery and paediatric surgery. In such centres it is the general speciality anaesthesiologist who takes the lead in management of such high-fidelity surgeries. A general speciality anaesthesiologist is among the first responders in management of emergency and trauma surgeries as well. The anaesthesia challenges posed by such cases cannot be undermined.

Apart from administering general anaesthesia, a general speciality anaesthesiologist must be an expert in regional anaesthesia techniques also, as many times the nature of surgery and underlying co morbidities of the patient necessitates regional nerve blocks. The introduction of ultrasound into anaesthesia practice has reinvigorated interest in regional anaesthesia and has made the practice of anaesthesia a more exhilarating experience. Gradually, several general speciality anaesthesiologists have gained expertise in the use of ultrasound because of its wide range of applications not only for regional nerve blocks but also for improving perioperative patient care.<sup>[4]</sup> They also play an active role in providing postoperative pain relief services.

Unlike super speciality anaesthesia practice, which is confined to tertiary care centres and state of the art medical colleges, requirement of a general speciality anaesthesiologist is almost universal. No hospital or medical institute can function efficiently if general speciality anaesthesia services are deficient.

The major factors that make anaesthesiology an attractive career option are first, the branch is intellectually stimulating and challenging in nature, a sublime amalgamation of all medical sciences from anatomy to medicine; second, the branch has a wide domain with various subspecialities ranging from perioperative patient care, critical care, pain management, palliative care, teaching, research and training which provides an opportunity to showcase skills and knowledge as a perioperative physician; third, the immense shortage of anaesthesiologists in the rural areas due to imbalance in the need: demand ratio has increased job security and lastly, no initial

monetary investment is needed to set up anaesthesia practice.

## LIMITATIONS OF THE SPECIALITY

Despite all the advantages that this speciality has to offer, it has its certain limitations. Anaesthesia is among the topmost stressful medical specialities, which is largely due to lack of control over working schedule, poor interpersonal professional relationship, poor recognition from surgical and nursing colleagues, general public and media. Stress and burnout may be profound enough to cause mental and physical breakdown. Such factors can make anaesthesia an unattractive career option.<sup>[5]</sup>

## ACADEMICS AND RESEARCH

### Academics

As per the 2018 data there are 639 diplomas and 2,375 doctor of medicine (MD) seats in anaesthesia.<sup>[6]</sup> In addition, the National Board of Examinations (NBE), New Delhi provides post graduate degree in anaesthesia through its diplomate of national board (DNB) training programme across various hospitals throughout the country.<sup>[7]</sup> Training of such a large postgraduate anaesthesia work force requires professionally trained anaesthesiologists and dedicated teachers. There is a tremendous opportunity for general anaesthesia specialists to take up teaching positions in medical colleges and institutes of excellence to satisfy their academic desires.

General speciality anaesthesiologists have an option to join multiple anaesthesia professional bodies to enrich their academics, interact with their peers and learn from each other's experiences. Few of the notable anaesthesia professional bodies in our country are Indian Society of Anaesthesiologists, Indian College of Anaesthesiologists and Research Society of Anaesthesiology Clinical Pharmacology.

The World Federation of Societies of Anesthesiologists (WFSA) provides fully paid grants for its fellowship programmes for training of young anaesthesiologists from developing countries across various anaesthesia subspecialities Fellowships range from 2 months to 1 year's duration. The details of these fellowship programmes can be accessed from WFSA website.<sup>[8]</sup>

### Research

Research plays a major role in the growth of any speciality as it generates new evidence and improves

treatment modalities for patient care. It is important that the research should be innovative that has the potential to impact the patient's clinical outcome.

Translation of basic science research into clinical anaesthesia practice is growing rapidly the world over. For example, the anti-inflammatory and anti-neoplastic activity of propofol and its role in preventing tumour recurrence is now being widely studied across a spectrum of cancers.<sup>[9]</sup>

Artificial intelligence (AI) is now making rapid inroads into medical practice and has wide ranging applications in anaesthesia practice also. A lot of research is being conducted on automated anaesthesia delivery systems and its safety profile is being established. AI systems that monitor and manage intraoperative patient haemodynamics are being developed. AI systems will be a big leap in improving patient safety and promoting favourable outcomes.<sup>[10]</sup>

Anaesthesiologists have also embraced technologies which were alien to them a couple of years back. The most notable among them is the application of ultrasound in anaesthesia practice. In the coming years, research in ultrasound nerve blocks is going to be an entrancing prospect. There is a need to study the applicability of enhanced recovery after surgery (ERAS) protocols in our clinical practice and develop our own surgery specific perioperative patient care protocols.<sup>[11]</sup>

### Ethical and legal implications

By following the four golden principles of medical ethics, a physician can avoid a multitude of ethical and legal burdens faced during routine clinical practice. These principles are: (i) principle of respect for patient autonomy: a detailed communication with the patient and family regarding intraoperative/postoperative complications and expected postoperative outcomes is imperative. Always obtain a written informed consent for the same; (ii) principle of beneficence: it is the moral obligation on the part of the clinician to act for patients' benefit. All perioperative patient care decisions should consider the safety of the patient with maximum benefit; (iii) principle of non-maleficence: it refers 'to do no harm'. Timely identification of all factors that may harm the patients should be identified by following proper risk identification and risk stratification protocols. Any anticipated complication likely to happen intraoperatively should be identified beforehand with proper treatment protocols in

place; (iv) principle of justice: it refers to having an element of fairness in all patient care decisions. Unnecessary delays in providing quality care to the patient needs to be avoided at all costs.<sup>[12]</sup>

Another aspect of clinical practice where an anaesthesiologist is largely deficient is documentation. It is quite often observed in a medico-legal case that pre-anaesthetic findings are not properly documented and intraoperative patient records are left incomplete, which is unpardonable because for the court of law the evidence is 'what is written' and not verbal communication of perioperative events.<sup>[13]</sup>

### Financial gains from anaesthesia practice

Anaesthesia is a time-intensive speciality and despite all their hard work, anaesthesiologists are at a financial disadvantage as compared to their surgical peers. However, with increasing number of hospitals, the demand for anaesthesiologists has also increased making the speciality financially lucrative. Clinicians employed in the government run institutes are paid as per central and state governments pay commission guidelines which are revised at regular intervals. In addition, government run institutes offer multiple incentives such as research and travel grants. The private sector hospitals have a very variable pay structure profile with different institutions having their own pay scales. However, of late, the financial remuneration practices in private sectors have changed; nowadays many hospitals follow a 'pool system' wherein all the earnings of the department are pooled together and shared among consultants as per predetermined percentages.<sup>[14]</sup>

### ANAESTHESIA TRAINING ABROAD

Postgraduate degree in anaesthesiology (MD/DNB) from India is currently not recognised as an equivalent degree by many of the medical councils across the world, thereby making it compulsory for the doctors to take up some form of an examination, or show evidence that one possesses the equivalent experience of similar training programme and eligible for exemption.

The various popular international anaesthesia training programmes are:

- a. United Kingdom (UK): Professional and Linguistic Assessments Board (PLAB) is an examination for the international medical graduates to gain license to practice and proceed to further speciality training in

the United Kingdom (UK). Another path is through the Medical Training Initiative (MTI) scheme which is designed for doctors to come to the UK for a limited period of time and work for the National Health System (NHS). European Diploma in Anaesthesia and Intensive Care (EDAIC) is considered as an equivalent to Fellow Royal College of Anaesthesiologists (FRCA) primary examination and a valid exemption by the Royal College of Anaesthesiologists (RCOA) to practise medicine in the UK.<sup>[15]</sup>

- b. United States of America (USA): Pre-requisite for working in the USA is to clear the 3-step United States Medical Licensing Examination (USMLE) for international medical graduates. Anaesthesiology training in the USA entails four years of Residency approved by Accreditation Council for Graduate Medical Education (ACGME). Board certification is achieved after passing basic and advanced anaesthesiology board exams during and after completion of training, respectively. Most accredited Fellowship programmes in subspecialties require board certification. Non-accredited fellowships are also available in various specialities, the information for which is available on the fellowship websites.<sup>[16]</sup>
- c. Australia and New Zealand: The training and accreditation of Anaesthesia Providers in both countries is done by the Australian and New Zealand College of Anaesthetists. Alternatively, the Australian Medical Board requires practitioners from other countries to pass the Australian Medical Council examinations.<sup>[17]</sup>

#### **Difference in the clinical practice in India and Abroad**

The main hindrance in providing best medical care is maldistribution of healthcare supplies and facilities, which creates shortage of physicians with appropriate training in several areas of the world, including developed countries. Worldwide there is a demand-supply mismatch of trained anaesthesia professionals.

Whether in India or abroad, private jobs generally pay much more than government jobs. Senior anaesthesiologists in the developed world generally get a choice to have less hours per week at work.

In the USA, anaesthesia is provided by 'Physician Anaesthesiologists' and 'Certified Registered Nurse

Anaesthetists' (CRNAs).<sup>[16]</sup> The healthcare in the UK, the Scandinavian countries, Australia and New Zealand are mostly publicly funded although private practice is permitted at many places. Anaesthesia is provided by 'Anaesthetists' or 'Physician Anaesthesiologists'. Many hospitals across developed countries also give an option for locum practice at weekends.

Majority of establishments in the developed world have electronic medical records which contribute to quality improvement and research work. This unfortunately has not become a reality in India.<sup>[15,17]</sup> In India, it is a common practice to work in 24-hour shift pattern, whereas no shift exceeds 12 hours in the western world. Services like obstetric anaesthesia with epidurals for labour analgesia, postoperative acute and chronic pain are well established in the western world.<sup>[16]</sup>

#### **Importance of Anaesthesiologists during pandemics**

During each pandemic, the anaesthesiologists have been called to the frontline. In 1950, poliomyelitis virus infection ravaged the people with partial paralysis. Negative pressure ventilation with the iron lung resulted in mortality as high as 90%. Arthur Guedel an anaesthesiologist helped in the establishment of positive pressure ventilation in poliomyelitis patients resulting in better survival rates.<sup>[18]</sup>

In 2003, during the outbreak of severe acute respiratory syndrome (SARS), the anaesthesiologists were given the responsibility of airway management and sedation of SARS patients. From 2014 to 2016, the Ebola virus ravaged the western part of Africa. Anaesthesiologists were again at the frontline managing the complications of the Ebola virus. During the current COVID-19 pandemic, the speciality of modern medicine that has emerged into the limelight is anaesthesiology. The anaesthesiologists have been in the fore front in the critical care management of COVID-19 patient because of their expertise in airway and ventilation management.<sup>[19]</sup>

#### **Encouraging the youngsters to adopt this super speciality**

Choosing a career within medicine requires honest analysis of oneself and therefore the specialities. The approach of an anaesthesiologist to medical science is logical and evidence-based. Physiology and pharmacology is taught thoroughly, from the basics. Anaesthesiologists do not make vague

diagnoses, but they measure and monitor physiology and attempt to maintain or restore homeostasis. Anaesthesiology has a uniquely flexible career path. You can choose from being a perioperative physician, intensivist, pain management expert or a palliative care provider.<sup>[20]</sup>

#### **Interaction with other specialities**

Anaesthesiologists have an important role as perioperative physicians. The number of patients with multiple comorbidities and the number of complex surgeries has increased. Unlike in the past where surgeon's opinion in patient management was supreme, the surgeons nowadays actively interact with their anaesthesiologist colleagues with regards to perioperative patient care. Anaesthesiologists are now active members of the hospital administrative system playing a key role in the efficient running of hospital and operation theatres.

#### **Current Popularity of Anaesthesia Speciality in India**

Till recently, anaesthesiology as a speciality was not preferred by many as a career in India, due to over-dependence on the surgeons, lack of the public recognition, poor infrastructure, professional stress involved, lack of safety guidelines, sparse funding for research and inadvertent medicolegal issues. This contrasts with the western world where anaesthesia as a speciality is chosen in the top ten branches of medical science.

As the branch developed more sophistication, its diversity has struck everyone in the medical field including medical graduates of India. The increased requirement of anaesthesiologists is reflected by rising number of postgraduate anaesthesia seats and subspecialty fellowship courses which is not only helping to gain the confidence of surgeons to manage more complex and critical cases but also solving the issues of 'recognition of the anaesthesiologist' as there is more direct patient contact.<sup>[21]</sup>

#### **Recognition in the society/medical fraternity**

Despite playing a crucial role in perioperative patient management, pain management and critical care, it is still felt that anaesthesiologists do not get the due they deserve, both within the eyes of the general public and also fellow medical professionals. A recent survey highlighted that most of the patients have poor knowledge about anaesthesia and the role of anaesthesiologist inside and outside operation theatre.<sup>[22]</sup>

Advancement in surgical technology is not possible without adequate support from anaesthesia fraternity and has now made surgeons to appreciate the contribution made by our speciality. The current COVID pandemic has proved how versatile and dynamic anaesthesiologists can be.

#### **Occupational and family happiness**

Despite high levels of professional satisfaction, growing evidence suggests that anaesthesia trainees experience high levels of work stress.<sup>[23]</sup> A good relationship with the surgeon is of fundamental importance in anaesthesiology. Personal and family time is essential to combat stress. It is important to develop hobbies that counteract the undesirable outcomes of stress. In future, we should include appropriate stress management skills including counselling in our training programmes to prevent damaging effects of stress.<sup>[24]</sup>

#### **FUTURE SCOPE**

Anaesthesia has witnessed tremendous developments since 1846 ether era. Advancement in monitoring during anaesthesia is playing a decisive role to interpret the perturbation at the initial phase. The introduction of automated workstations, advanced gadgets for airway management and monitoring, simulators, state-of-the-art anaesthesia techniques like automated anaesthesia delivery system, opioid-free anaesthesia and nanotechnology will take this speciality one step further in to the 21<sup>st</sup> century. Emphasis must be given to innovate monitors or instruments which are sensitive, precise and cost effective to the huge population living in rural areas. With growing complications of surgery and increased burden of diseases in patients, it is essential to evaluate outcomes in patients undergoing high totality surgical procedures and develop relevant patient management guidelines and protocols. The lessons that we have learned from the current COVID pandemic regarding infection control and prevention, best practices of airway management and ventilation and effective team response will promote a higher quality of patient care, education, research and culture building in the future.

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#### **Conflicts of interest**

There are no conflicts of interest.

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