

## PERSPECTIVE

## ANESTHESIA TRAINING

# Specialist training in anesthesia around the world

Romana Durrani, DA, HP&M, FCAI, DPMCAI, CCST Anesthesia

**Author affiliation:**

Consultant Anesthesia, United Lincolnshire Hospitals Trust, NHS, UK; E-mail: [romanadurrani@gmail.com](mailto:romanadurrani@gmail.com)

## ABSTRACT

Anesthesia history has been marked by periods of nice developments and innovations followed by long periods of idleness. The interest in surgical anesthesia was in fact, a result of the painful surgical procedures being performed by merely restraining the patient by four or more body builder strong men. Perhaps the first anesthesia was a natural one; by severe cold which made surgeries less painful in wounded soldiers. Other developments followed in periodic succession.

But pharmaceutical anesthesia brought with it the side effects too. So a concept of balanced anesthesia was born. The debate about general anesthesia and regional anesthesia is also an old one. The recent four to five decades revolutionized monitoring techniques and thus allowed complex cardiovascular and neuro-surgery possible USG has been a great mile stone.

All this course has always put a burden on the anesthetist to keep himself abridged, if he has to be competent as well as safe healthcare professional. Different countries have different schedules of anesthesia training and this special invited paper by Dr. Romana Durrani offers a bird's eye view of such training in a few countries. It is published as a guide for our young medical graduated, who might like to pursue their careers in one of these countries.

**Key words:** Anesthesia; Anesthesia, General; Development; Training, Postgraduate

**Citation:** Specialist training in anesthesia around the world. *Anaesth. pain intensive care* 2023;27(5):600-607; DOI: [10.35975/apic.v28i3.2482](https://doi.org/10.35975/apic.v28i3.2482)

**Received:** 23 October 2023; **Revised:** October 15, 2023; **Accepted:** 06 November 2023

## Early anesthesia

Early anesthesia can be traced back to ancient times (Babylonians, Greeks, Chinese and Incas), but one of the first European accounts occurred in the 1200s when Theodoric of Lucca, an Italian physician and bishop, "used sponges soaked with opium and mandragora [from the mandrake plant] for surgical pain relief,"<sup>1</sup>

Shakespeare's observation (from *Cymbeline*) explains why attempts to alleviate the pain of disease, injury or simple surgical procedures by producing unconsciousness are almost as old as civilization, although the techniques were crude. Most involved ingestion of ethanol and or herbal mixtures, but 'knock-out' blows to the head and bilateral carotid artery compression (carotid derives from the Greek for stupor) are also described.<sup>1</sup>

The first anesthetics in these islands were given on 19 December 1846, one 'probable' in Dumfries (there is no contemporary record) and the other 'definite' at 24

Gower Street, London. However, the techniques and methods were crude and could not give a qualitative or quantitative service.

## Anesthesia as a specialty

These many developments all improved the standing of the anesthetist to that of independent practitioner, a situation confirmed in 1948 by all specialties being given equal status in the NHS. So, by 1950 all of the elements of modern anesthesia were in place.

Training programs have been devised since then in different parts of the world and continued to develop further with more sophistications and modernisation.

We will be giving an overview of different programs in this article, focusing on United Kingdom, Republic of Ireland, Australia, USA and Pakistan.

## United Kingdom

The current program is divided in 2 parts & completion of both parts is mandatory to be certified anesthesiologist CCT holder. CCT holder is eligible to apply for a substantive/ permanent NHS post of work privately as consultant. The other route of becoming consultant is CESR

### CCT (Certificate of Completion of Training). 7 years (non-run though)

- A. CT program 3 years (CT1, CT2, CT3)
- B. ST program 4 years (ST4, ST5, ST6, ST7)

During the second year of foundation training, the doctors apply for postgraduate training of UK anaesthesia training program. The post holder is called CT doctor of ST doctor (CT core trainee, ST: specialist trainee)

Curriculum changed in 2020. There is a central application for CT post and one has to finish primary exam during CT time. Applications are invited for ST selection after CT stage is finished. Final exam must be passed in ST 5 level / or pause training /or leave program

The distribution of modules is not compact in terms of level of training but it's a mixed exposure on CT level as well as at ST level of the same. Defined number of modules is not available as a document

Obstetric	Emergency anaesthesia
Peds	GI surgery
Neuro	ENT
cardiac	ICU
Anaesthesia outside OR	Ambulatory
Vascular Surgery	Regional anaesthesia
Pain Medicine	Gynaecology
General surgery	Ortho + Trauma
USA has 2 months block each, but no fixed blocks in UK <sup>a</sup>	

Trainees also have the option of completing dual Certificates of Completion of Training (CCT) in anaesthesia and intensive care medicine at a later stage.<sup>2</sup>

### CESR

CESR (*Certificate of Eligibility of Specialist Registration*) is an out of national training scheme. That aims at training arrangements by personal efforts and getting it signed off. It includes total of 15 modules, 7 generic modules 7 clinical 1 year special interest year. Seven generic modules are non-clinical. Clinical

modules begin with module 8, which is peri-op medicine, 9<sup>th</sup> is general anaesthesia that has further sub modules, case mix of all the main subs (7-8 sub specialties). Evidence of all this training should be with in last 5 years. CUT form "completion unit of trainings. It can be followed by one-year SIA (special interest area).

**Exam:** Primary exam to be passed before applying for ST. Final FRCA to be passed at ST5 level

## Republic of Ireland

Republic of Ireland is an independent country & has its own training program run by College of anaesthesiologists of Ireland CAI. The exams & training is equally accepted all over the world like UK training /exam. It is called CSCST or CCST which allows one to work as consultant. The other route to reach the consultant level is called Alternate pathway.

### CCST (CSCST: Certificate of Successful Completion of Training). 6-year run through

It is a run through program. Position holder is called SAT doctor (Specialist anaesthesia trainee) & the levels are SAT1- SAT6.

Candidates apply through a central application system, following by short listing and interviews. Induction in program is after internship/foundation years. One can also apply few years after internship. However, there is no exemption of training years on basis of previous years, so the training time remains 6 years.

Total 16 modules are to be done with competencies signed off. Online trainee progress report, 2 times in 6 months is mandatory (beginning and end of 6-month session) plus one in middle (to see progress in right direction) is usually optional. Each module minimum 3 months, except pediatrics & ICU (6 month each). Pain module is offered only when one is eligible for final fellowship exams. All modules are repeated as case mix in the last 2 years working as senior registrar who is basically trained at that level to learn work like consultant with a solid academic knowledge.

**Exam:** MCAI is to be passed by year 2 and FCAI to be passed by Year 4. MCAI was previously known as "primary" but to make it look equal to other colleges its re-named as membership, however, membership alone without fellowship is not a qualification and cannot be registered to work as specialist anywhere in the world

Failing to get through the exam can result in halting the training or ending the training. Exam plus training ends

Basic Specialist Training	Examinations
Initial Competence Test	Specialist Registrar Training
Preoperative assessment, premedication	Obstetric Anaesthesia
GA induction, maintenance and recovery care	Intensive Care Medicine
Trauma management, stabilisation and transfer	Vascular Anaesthesia
Critical Incidents, management of CPR	Paediatric Anaesthesia
Regional Anaesthesia	Monitoring and Procedures
ICU and HDU Care	Regional Anaesthesia
Six-monthly BST In-Training Assessment No 1	Trauma Management
Six-monthly BST In-Training Assessment No 2	Cardiothoracic Anaesthesia
Six-monthly BST In-Training Assessment No 3	Anaesthesia for Neurosurgery and Neuroradiology
Six-monthly BST In-Training Assessment No 4	Anaesthesia for Ambulatory Surgery
Award of CCBST	Anaesthesia for Orthopaedic Surgery
Registrar Training Programme	Anaesthesia for General and GU Surgery
	Anaesthesia for ENT and Maxillofacial Surgery
	Communication skills and teamworking
	Pain Medicine
	Professionalism for Specialist Registration
	Advanced Airway Skills
	Vascular access skills
	Six-monthly SpR In-Training Assessment No 1
	Six-monthly SpR In-Training Assessment No 2

**Image-1:** The table shared is a snapshot of a trainee who has some training done outside program & has achieved the basic training certification. The left side shows alternate route & does not show the registrar level.

Right side is national training program modules (SAT). All in green are achieved milestone & pending appearing as red.

Modules aren't available in one hospital/city, change of hospital/city is mandatory.

## United States of America

### 4 years run through

This program also starts right after the internship year & run by ABA and at the end of training one gets certified ABA (American Board of Anesthesiology) Position is called CA (Clinical Anesthesia)

The three clinical anesthesia years (CA-1, CA-2, CA3) that include training in basics, subspecialty, and advanced anesthesia, as well as opportunities to participate in scholarly activity. Rotations vary in length from one to three months during 4 years.

The BASIC Exam focuses on the scientific basis of clinical anesthetic practice, including pharmacology, physiology, anatomy, anesthesia equipment and monitoring. Residents are encouraged to take it at the end of their CA-1 year.

The ADVANCED Exam focuses on clinical aspects of anesthetic practice, subspecialty-based practice and advanced clinical issues. Physicians take this exam after completing residency and passing the Basic Exam

Finals advanced exam 1 written then oral boards with long short case scenarios based. <sup>4</sup>

**Table 2: Clinical Anesthesiology Training**

CA1	Length	CA2	Length	CA3	Length
Ortho & regional	2 months	cardiovascular	3 months	Cardiac	1 month
General	2 months	Neuro	1 month	Obstetric	1 month
Gyne & plastic surgery	1 month	Obstetrics	1 month	Neuro	1 month
ENT	1 month	Peds	1 month	Peds	1 month
Major Spine	1 month	Regional	1 month	Regional	2 months
Surgical Critical care	1 month	Preop	1 month	Elective	6 months
Recovery Room & acute Pain Med	2 months	Surgical ICU	1 month		
Transfusion med	2 weeks	Pain Clinic	1 month		
Outfield	2 weeks	Electives	2 months		
Elective	1 month				

**Table 3:**

Inpatient internal medicine	Inpatients cardiology	Surgical ICU	Medical ICU
Nephrology	Inpatient neurology	Emergency Medicine	Preop Clinic
Acute Pain Clinic	Transfusion Medicine	Otorhinolaryngology	research
<i>Rotation schedules are composed of 13 four-week rotations and are comprised of the following experiences: (Minnesota program example)<sup>5</sup></i>			

The APPLIED Exam includes the traditional Standardized Oral Examination (SOE) and the Objective Structured Clinical Examination (OSCE) component.

Physicians take this exam after passing the advance exam.

As far as the training itself is concerned there are modules & trainee/ resident has rotation in each.

All the rotation schedules are composed of 13 four-week rotations and are comprised of the following Tables 2, 3 & 4.

**AUSTRALIA:** Post name: ANZCA trainee

Certificate

name:

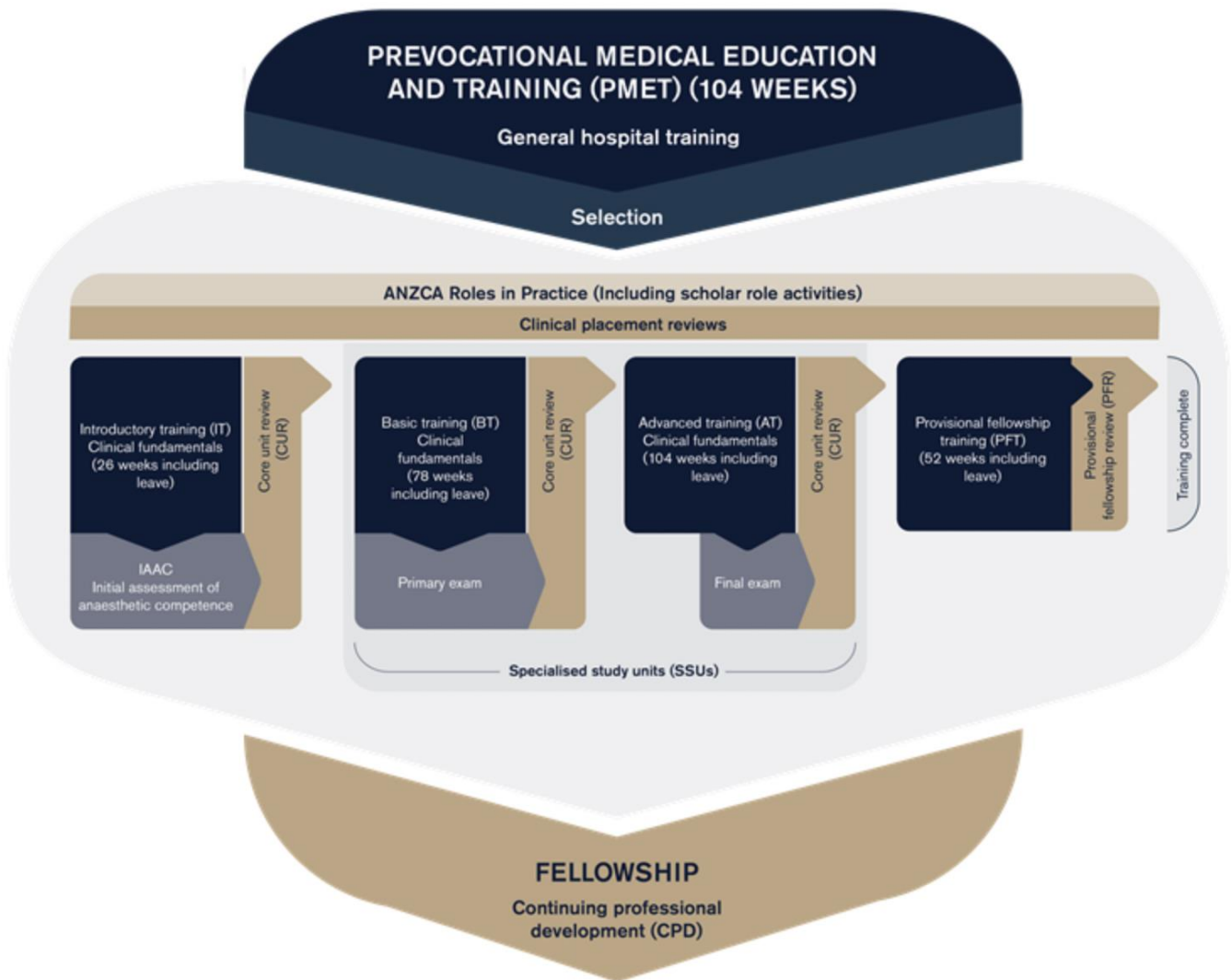
FANZCA

**Table 4: USA anesthesia training exams & levels**

Initial Exams	Subspecialty Exam	Recertification Exam
BASIC	Adult Cardiac Anesthesiology	ASPEX
ADVANCED	Critical care Medicine	Subspecialty
APPLIED	Healthcare administration, leadership & management	Recertification
	Hospice & palliative care Medicine	
	Neurocritical care	
	Pain Medicine	
	Pediatric Anesthesiology	
	Sleep Medicine	

Its 5 years run though program five-years' supervised training: two years of introductory and basic training; two years of advanced training; and one year of provisional fellowship training.<sup>6,7</sup>

This figure gives a complete layout of the training program & makes it easy to understand the flow





## Learning outcome code glossary

ANZCA Roles in Practice (AR)	Clinical fundamentals in introductory, basic and advanced training	Specialised study units (SS)
Medical expert (ME)	General anaesthesia and sedation (GS)	Head and neck, ear nose and throat, dental surgery and electro-convulsive therapy (HN)
Communicator (CM)	Airway management (AM)	Ophthalmic procedures (OP)
Collaborator (CL)	Regional and local anaesthesia (RA)	Neurosurgery and neuroradiology (NS)
Leader and Manager (LM)	Perioperative medicine (PO)	General surgery, urological, gynaecological and endoscopic Procedures (GG)
Health advocate (HA)	Pain medicine (PM)	Thoracic surgery (TS)
Scholar (SC)	Resuscitation, trauma and crisis management (RT)	Cardiac surgery and interventional cardiology (CS)
Professional (PF)	Safety and quality in anaesthetic practice (SQ)	Obstetric anaesthesia and analgesia (OB)
		Vascular surgery and interventional radiology (VS)
		Orthopaedic surgery (OR)
		Intensive care (IC)
		Paediatric anaesthesia (PA)
		Plastic, reconstructive and burns surgery (PB)

The specialized study units define the further specialized knowledge and skills required for the anesthetic management of patients in specific contexts. They are:

1. Cardiac surgery and interventional cardiology
2. General surgical, urological, gynecological and endoscopic procedures
3. Head and neck, ear nose and throat, dental surgery and electro-convulsive therapy
4. Intensive care
5. Neurosurgery and neuroradiology
6. Obstetric anaesthesia and analgesia
7. Ophthalmic procedures
8. Orthopedic surgery
9. Pediatric anaesthesia
10. Plastic, reconstructive and burns surgery
11. Thoracic surgery
12. Vascular surgery and interventional radiology

As trainees focus their attention on the completion of specialized study units during basic and advanced training, they will be applying the knowledge and skills attained while working through the clinical fundamentals.

Volume of practice and assessment requirements for each of the specialized study units are detailed at the start of each unit. In addition, trainees are required to select and complete a minimum of six case-based discussions (CbDs) from the specialized study units, two of which must be done in basic training and four in advanced training.

## Pakistan (FCPS)

### 4-years Run though.

It's a 4-year training program run by CPSP (College of Physician & Surgeons of Pakistan). FCPS part 1, is mandatory for entering the program. After passing exam (MCQs) there are options of public sector and private sector seats, public sector is through central application and private sector is by application to individual institute. Securing a training post can be a few months later of a year or two later FCPS1. Next step in IMM exam midway of training (intermediate module) which is MCQ+SEQs and oral based exam, this is followed by FCPS-2 exam after completing 4 years. One can only appear in exam if one has submitted a dissertation project in hard copy and has been checked and approved by college as genuine. The proposal of the same has to be accepted by College before IMM. FCPS-2 exam is MCQs and oral exam.

There are no defined modules mandatory or non-mandatory and no blocks are assigned for any sub specialty. Totally depends on the institution and supervisors' personal discretion and skills.

Other existing programs are DA and MCPS, both are two years programs and regulated by local training bodies

One of the main difference is that most of the other training programs continue even after final exams so that trainee can have a broader vision of everything with a solid expert knowledge. Whereas passing FCPS part 2 exam, is the end of training. Many take time off & stay at home to study & improve bookish knowledge to be reproduced in exam. There is an induction interview after passing Part 1, but there is no exit interview to conclude the other learning aspects of becoming a consultant.

### Conflict of interest

None declared by the authors.

### Author's contribution

The author does not claim any originality of the information given in this paper.

## REFERENCES

1. University of Medicine and Health Sciences. Medical Milestones: Discovery of Anesthesia & Timeline. Posted by Scott Harrah (November 11, 2015) Available at: <https://www.umhs-sk.org/blog/medical-milestones-discovery-anaesthesia-timeline>. (Accessed on 15 October, 2023).
2. Royal College of Anaesthetists. The stages of training. Available at: <https://rcoa.ac.uk/training-careers/considering-career-anaesthesia/stages-training>. (Accessed on 15 October, 2023).
3. The College of Anaesthesiologists of Ireland (CAI). Specialist Anaesthesiology Training Programme. Available at: <https://www.anaesthesia.ie/training/specialist-anaesthesia-training-programme/#1534531477331-c3cc4dd3-a4fc> (Accessed on 18 October, 2023).
4. The American Board of Anesthesiology (ABA). TRAINING PROGRAMS. Available on; <https://www.theaba.org/training-programs/>. (Accessed on 5 October, 2023).
5. Mayo Clinic College of Medicine & Science. Anesthesiology Residency (Minnesota). Available on: <https://college.mayo.edu/academics/residencies-and-fellowships/anesthesiology-residency-minnesota/curriculum/> (Accessed on 5 October, 2023).
6. Australian and New Zealand College of Anaesthetists & Faculty of Pain Medicine (ANZCA). Training as an anaesthetist. Available at: <https://www.anzca.edu.au/education-training/anaesthesia-training-program/training-as-an-anaesthetist> (Accessed on 10 October, 2023).
7. ANAESTHETICS TRAINING PATHWAY. Available at: [https://www.monash.edu/data/assets/pdf\\_file/0003/1959051/NWV-PATHWAY\\_Anaesthesia\\_ONE-PAGE-2019.pdf](https://www.monash.edu/data/assets/pdf_file/0003/1959051/NWV-PATHWAY_Anaesthesia_ONE-PAGE-2019.pdf) (Accessed on 10 October, 2023).
8. Yamamoto S, Tanaka P, Madsen MV, Macario A. Comparing Anesthesiology Residency Training Structure and Requirements in Seven Different Countries on Three Continents. *Cureus*. 2017 Feb 26;9(2):e1060. doi: [10.7759/cureus.1060](https://doi.org/10.7759/cureus.1060). PMID: [28367396](https://pubmed.ncbi.nlm.nih.gov/28367396/); PMCID: [PMC536408](https://pubmed.ncbi.nlm.nih.gov/PMC536408/)