

# Pravara Institute of Medical Sciences (Deemed University)

Loni Bk - 413 736, Tal. Rahata, Dist. Ahmednagar (MS)

Established Under Section 3 of UGC Act 1956, Vide Govt. of India Notification  
No.F.9-11/2000-U.3, dated 29<sup>th</sup> September 2003



## Syllabus

### DA (Diploma in Anaesthesia)

Approved Vide Academic Council Resolution  
No. 08 / AC / 2008 dated 12<sup>th</sup> Sept. 2008.



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## SYLLABUS FOR POST GRADUATE COURSE - DIPLOMA (D.A.) ANAESTHESIA – SYLLABUS

**At the end of three years of training as residents in anaesthesia, the candidates should be fully conversant with theory and practical aspects of**

- A: Human Anatomy and Physiology of various organ system and cellular components in relation to anaesthesia including muscles, neuromuscular junction, nerve plexuses, cardiovascular, respiratory, neurological, hepatobiliary, renal, endocrine and temperature homeostasis, theories of mechanism of production of anaesthesia, changes during pregnancy, various tests investigation to evaluate the functional status of organ system as applied to Anaesthesia Management, Intensive Care Practice and Pain Relief.
- B. Pharmacology as applied to Anaesthesia, Intensive Care Practice and Pain relief including General Pharmacological Principles, Pharmacokinetics and Pharmacodynamics of Anaesthetic Drugs, “(including uptake and distribution of Inhaled anaesthesia agents and all the Adjuncts used in anaesthesia. Drugs used for treatment of various Diseases and Drug Interaction.
- C. Pathophysiology of various diseases including disorders of cardiovascular respiratory, neurological, hepatobiliary, renal endocrine and immune systems, various tests/ investigations to grade / measure the disease process of various organ systems as applied to anaesthesia management, intensive care practice and pain relief.
- D. Medicine as applied to the practice of anaesthesia including diagnosis and management of Diabetes, Hypertension, Bronchial Asthma, chronic Obstructive Pulmonary Diseases, Respiratory Failure, ARDS, Myocardial Ischemia / Infarction, Arrhythmia shock, congestive Heart Failure, Acute / Chronic Renal Failure, Head Injury, Unconscious patients, Status Epilepticus / Asthmaticus, Endocrine Disorders, Diseases related to Dysfunction of Hepatobiliary, Muscular, Connective Tissues and Immune system, Management of Perioperative Infection, Neuromuscular Disorders, Poisoning etc. and interpretation of EPG / Blood Gases / Other Biochemical Values and function Tests.
- E. Physics as applied to Anaesthetic gases, vapours, anaesthesia machine, breathing systems, monitors, ventilators, therapeutic devices & other relevant equipment including physical principles involved in their construction and functioning.

- F. Perioperative Anaesthesia management including pre-operative evaluation intra-operative management as well as post operative care, monitoring (invasive as well as non-invasive) as applied to various surgical specialities and age group.
- G. Theory and practice of various techniques / aspects of Routine & Emergency cases of General Anaesthesia (e.g., Intravenous / Inhalational, Endotracheal / Mask/ LMA/ COPA, Spontaneous / Controlled mode of ventilation, induced hypotension / hypothermia etc.), Regional blocks (Spinal, Epidural & Peripheral Nerve block) and Local Anaesthesia, including various postures required for anaesthetic / surgical procedures, their effects and Recent Advance for most minor to supra major surgeries in the field of.
- General Surgery : e.g. minor cases like haemorrhoidectomy to supra major cases like liver transplant.
  - Gynaecology and Obstetrics
  - ENT and Head & Neck
  - Orthopaedics
  - Ophthalmology
  - Pediatric & Neonate : Differences between adult and pediatric Anatomy, Physiology, Pharmacology, Anaesthesia principles, pediatric / neonatal emergencies, postoperative care, fluid & ventilator management etc.
  - Cardiac Vascular & Thoracic : Conduct of closed heart as well as open surgeries (Valvular, Ischemic, Congenital- Cyanotic & Acyanotic), CABG (including off pump), pulmonary Cases (Insertion of Double Lumen tube, one lung anaesthesia), Thymus and Vascular surgeries etc. Ability to go on Cardiopulmonary by pass and disconnect from by pass, ability to take, manage and interpret Arterial, central venous and P.A.Lines, postoperative care, management of re-explorations etc.
  - Neurosurgery : Ability to monitor ICP, Management of head injuries, bleeds, tumours, etc with raised ICT. Ability to safely manage cases in sitting, prone, lateral, jack knife positions and anaesthetic management for neuro-radiology produces.
  - Urology : Management of endoscopic surgeries like TURP/TURBT etc. Problems related to TURP, extracorporeal shock wave lithotripsy, percutaneous placement of nephrostomy etc., anaesthetic management of patients with acute and chronic renal failure, anaesthetic management of renal transplant cases of donor as well as recipient.
  - Plastic : Management of burns contractures, congenital faciomaxillary abnormalities like cleft lip and palate, faciomaxillary injuries like fracture mandible, maxilla, zygoma, panfacial fractures, difficult intubations, microvascular surgeries, reconstructive surgeries, aesthetic surgeries etc.

- Dental : Monitored Anaesthesia Care, Anaesthetic management of pedodontia patients, maxillofacial surgeries including TMJ Amkylosis, Awake Retrograde & Fibreoptic intubations.
- Endoscopies / laparoscopies : Anaesthetic management, specific requirement and complications of various endoscopies like cystoscopy, ureteroscopic, PCNL, hysterectomy, thoracospy, Mediastinoscopy, tube ligation, appendiastinoscopy etc. and Lap. assisted/ laparoscopic surgery like hysterectomy, tube ligation, appendicectomy, cholecystectomy etc.
- Anaesthesia for various diagnostic, therapeutic and specialized procedures
- Anaesthesia for Geriatric patient
- Anaesthesia for surgery using LASER
- Anaesthesia / Sedation technique out side operating room : Electroconvulsive shock therapy (ECT), Eletrophysiologic tests. radiofrequency ablation. Cardioversion, Cardiac catheterization , special anaesthetic considerations in radiology and interventional radiology related to Dye allergies, Embolization, Monitoring / Equipment options in the MRI suite.

#### H. History of Anaesthesia

- I.. Airway Management : Assessment of difficult airway, awake, Retrograde, Use of intubating LMA's Intubating Stylets, various laryngoscopes designated for difficult airway, insertion of combitube, Ability to perform Cricothyrotomy and use of venturi, Minitrach and Fibreoptic intubations etc.
- J. Basic & Advanced Cardiopulmonary & Cerebral Resuscitation (CPCR) for all age group of patients under different situations e.g. neonates, pregnant females, poisoning cases, trauma victims etc.
- k. Acid basic & Fluid management including use of Crystalloids, colloids blood & blood products
- L. Artetical, Central Venous and P.A. Lines : Establishment, management and interpretation
- M. Anaesthetic drug used in perioperative care
- N. Equipments (Minor to advanced monitoring) their use, maintence, sterilisation and care
- O. Medical gases : Knowledge of Manufacturing, Storage and Central pipeline Systems

- P. Day Care / Outpatient Anaesthesia
- Q. Remote Location Anaesthesia : Anaesthetic practice during distasers and for large turnover surgeries in camps / mass casualties.
- R. Emergency Anaesthesia
- S. Monitored Anastesia Care
- T. Labour Analgesia
- U. Pain relief : Acute & Chronic
- V. Critical care practice including oxygen therapy, respiratory therapy, ventilatory support, haemodynamic monitoring, prevention and management of multi organ failure, and care of patients with brain damage or brain dead for organ Transplant.
- W. Advanced Trauma Life Support (ATLS)
- X. Occupational Hazards
- Y. Safely in Anaesthesia
- Z. Complications of Anaesthetic procedures, its prevention , detection and management
  - AA. Record keeping in Anaesthesia
  - BB. Medical Audit
  - CC. Quality Assurance
  - DD. Anaesthesia standards : e.g., Minimum monitoring standard
  - EE. Medicolegal aspects in Anaesthesia
  - FF. Ethics in anaesthesia
  - GG. Principles of Evidence Based Medicine
  - HH. Basic Research Methodology and Clinical Trials
  - II. Bio-Statistis
  - JJ. Computers : Utility, Computer assisted learning and data storage, Computersied anaesthesia records
  - KK. Skill : for planning of operation theater, pain clinic, recovery room, intensive care etc. including selection and purchase of equipments.

## TRAINING PROGRAMME

### A. ADMINISTRATION OF ANAESTHESIA & PERIOPERATIVE PATIENT CARE

#### I Year Residents :

Assisting during minor & major anaesthesia procedures and managing patients in recovery or care areas (all Under Supervision)

The first month of the first year will be spent in orientation in the operating rooms and attending lectures covering the basics of the discipline. After that the first year of training will be spent in learning the fundamentals of anesthesiology with emphasis on checking of anaesthesia equipment including anaesthesia machine, airway equipment and appropriate monitors, preparation of appropriate dosage of various drugs required at specific point of time, mastering clinical skills regarding selection and implementation of an appropriate, anaesthesia plan, placement of lines induction of anaesthesia, intubation, maintenance of appropriate anaesthesia plan, placement of lines induction of anaesthesia, intubation, maintenance of anaesthesia, and the successful reversal of anesthetic agents. Emphasis will also be placed on learning regional anaesthesia and Cardiopulmonary resuscitation.

To start with the first year residents will observe and then slowly become independent in giving general anaesthesia and regional anaesthesia to patients belonging to ASA grade I & II for minor and major surgery, under graded supervision. They will be posted in rotation to the following specialties during the first year. Preoperative assessment area. General surgery, Gynecology, Obstetrics. Orthopedic, ENT and Recovery Room. They will be assigned to cases in the Operating Room at the hospitals attached to medical teaching institutes affiliated to the University under which they have registered and will gain experience under the direction and supervision of respective academic faculty.

#### II Year Residents :

Assisting during minor & major procedures under anaesthesia, managing patients in recovery or intensive care areas and independently conducting minor procedures under anaesthesia (GA/RA) for ASA grade I or II patients (including expected difficult airway cases and cases with expected major body fluid shift.)

The second year of training will be devoted to the subspecialties / superspecialties of anaesthesia at the hospitals affiliated to medical teaching institute and the university under the supervision of a faculty member with an aim to concentrate on mastering the knowledge and technical skills associated with providing anaesthesia to subspecialty / superspecialty patient Residents will be rotated in pediatric anaesthesia, Neuroanaesthesia cardiovascular & Thoracic anaesthesia, Ambulatory anaesthesia, obstetrics, Dental Surgery,

Ophthalmology, pain Clinic/ Pain Management, Peripheral Theatres, anaesthesia Outside Operating Rooms, Trauma care Transplant Surgeries etc. They will be taught to give general anaesthesia and regional anaesthesia ( Extradural Block – EDB, Spinal Block and Peripheral Nerve blocks) to ASA grade I, II, III & IV patients under supervision for superspeciality theatre. They should be able to give GA/RA to other ASA grade I & II patients independently. Rotations in critical care areas e.g. Trauma Ward, Post Anesthesia Care Unit / ICU/ Emergency Medical Service will also be part of the second year training curriculum. they should learn pediatric & trauma life support & maintain skills for basic & advanced cardiocliffe. the student should be able to analyze and present scientific data

**B. ACADAMIC ACTIVITIES :** Participation by way of attendance / presentation in Didactic lectures, symposia, Group discussions, Workshops, Morbidity & Mortality meet, Panel Discussion etc. Each student should actively participated in at least 6 academic sessions per year during the total trainging period of three total 12.

**C. LOG BOOK MAINTANCENCE** of all the clinical and academic work done by the student in his /her tenure of three years

Minumum Procedures / Cases required to be done and entered in the log book

<b>Regional Block</b>	
Spinal	= 20 to do
Epidural	= 20 to do
Combined Spinal Epidural	= 15 to do
Caudal	= 5 to do
Bier block (IVRA)	= 3 to do
Sciatic / Femoral	= 3+3 ( to observe or do )
Ankle Block	= 3 ( to observe or do )
Stellate Ganglion Block	= 2 ( to observe or do )
Brachial Plexus	= 5 ( to observe & 10 to do )
Sympathetic block	= 2 ( observe or do )
Tigger Point injection	= 2 ( observe )
Other perioheral N.Block	= 2 to do
Ophthalmic blocks	= 2 ( to observe )
Field Block	= 2 ( to observe or do )
<b>Anaesthesia for</b>	
General Surgery	= 30 to do
Gynecology	= 30 to do

<b>Regional Block</b>	
Obsterics	= 15 to do
ENT	= 15 to do
Orthopedics	= 15 to do
Ophthalmology	= 3 ( to observe )
Plastic surgery	= 3 ( to observe )
Endoscopy /Laparoscopy	= 3 ( to observe )
Urology	= 3 ( to observe )
Open Hearth	= 3 ( to observe )
Closed heart	= 3 ( to observe )
Pediatric surgery	= 3 ( to observe )
Craniotomy	= 3 ( to observe )
Spinal Surgery	= 3 ( to observe )
Joint replacement	= 3 ( to observe )
Anaesthesia for organ transplant	= 3 ( to observe – desirable )
ECT	= 10 ( to do )
Radiology/ CT Scan	= 5 ( to do )Anaesthesia / sedation
<b>Procedures</b>	
Internal Jugular Cannulation	= 5 ( to observe or do )
External Jugular Cannulation	= 5 ( to do )
Subclavian Vein Cannulation	= 5 ( to observe or do )
Peripheral Central Line	= 10 ( to do )
Arterial Line Cannulation	= 7 ( to do )
Endotracheal Intubation	= 150 ( to do )
LMA insertion	= 20 ( to do )
Difficult airway Management	= 5 ( to do )
<b>Conduct of Cases</b>	
ASA I	= 150 ( to do )
ASA II	= 100 ( to do )
ASA III	= 30 ( to observe )
ASA IV	= 20 ( to observe )
Labour analgesia	= 5 ( to observe or do )



## ASSESSMENT

★ **At the end of I year :** Internal Assessment at Institute level so as to allow the candidate to do minor surgical procedures under GA/RA for ASA grade I or II patients ( excluding difficult airway cases and cases with expected major body fluid shift) undependently in second year.

### A. Theory :

- **Paper I** – Basic Sciences related to Anaesthesia (History, Anatomy, Physiology, Pharmacology, Pathology, Physics, Instrument & Equipments etc. )
- **Paper II** – Theory & Practical Anaesthesia

### B. Practical :

- Clinical cases including 1 long case and 2 short cases
- Viva voce on equipments, drugs investigations, laboratory findings etc.

★ **At the end of II year :** Final Assessment ( By University)

### A. Theory :

- **Paper I** – Basic Sciences related to Anaesthesia (History, Anatomy, Physiology, Pharmacology, Pathology, Physics, Instrument & Equipments etc. )
- **Paper II** – Theory & Practical Anaesthesia
- **Paper III** – Clinical sciences like Medicine & Surgery related to Anaesthesia

### B. Practical :

- Clinical cases as per University Protocol
- Viva voce on equipments, drugs investigations, laboratory findings etc.

## Recommended Reading :

### I Books

S.No.	Name	Authors/Editors	Year of publication	Last Edition	Publication House
1	Lee's Synopsis of Anaesthesia	G.B.Cashman N.J.H.Davies	2006	13 <sup>th</sup>	Butterworth Heinemann
2	Wylie & Churchill Davidson's A practice of anaesthesia	Thomas E. Healy Paul R.Knight	2003	7 <sup>th</sup>	Ammold
3	Anaesthesia	Miller Ronald D.	2005	6 <sup>th</sup>	Elsevier Churchill Livingstone
4	Yao and Artusio's Anaesthesiology	Fun Sun F. Yao	2003	5 <sup>th</sup>	Lippincott Williams & Wilkins
5	Anaesthesia and Co-existing Disease	R.K.Stoelting S.F.Dierdorf	2002	4 <sup>th</sup>	Churchill Livingstone
6	Clinical Anaesthesiology	G.E.Morgan M.S.Mikhail	2005	4 <sup>th</sup>	McGraw Hill
7	Understanding Anaesthesia Equipments	Jerry A. Dorsch Susan E. Dorsch	1998	4 <sup>th</sup>	Williams & Wilkins
8	Wards Anaesthesia Equipments	Davey	2005	5 <sup>th</sup>	Baillirro Tindall
9	Anatomy for anaesthetists	Harold Ellis Stanley Fieldman	2005	8 <sup>th</sup>	Blackwell Science
10	Pharmacology & Physiology in Anaesthetic Practice	R.K.Stoelting S.C.Hillier	2006	4 <sup>th</sup>	Lippincott Raven
11	Shnider and Levinson's Anesthesia for Obstetrics	Hughes Levinsons Rosen	2002	4 <sup>th</sup>	Lippincott Williams & Wilkins
12	Understanding Paediatric Anaesthesia	Jacob	2006	4 <sup>th</sup>	Elsevier
13	Cardiac Anesthesia	Laplan	2005	4 <sup>th</sup>	W.B.Saunders & Co.
14	Clinical application of Medical Ventilation	David W.Chang	2001	2 <sup>nd</sup>	Delmar Thomas Learning

## II. Journals

1	Indian Journal of Anaesthesia	5	Anaesthesia
2	Journal of anaesthesiology and Clinical Pharmacology	6	British Journal of anaesthesia
3	Indian Journal of Critical Care Medicine	7	Anesthesia & Analgesia
4	Anesthesiology Clinics of north America	8	Anesthesiology