

PDCC in Cardiac Anaesthesia

- **Eligibility: (Basic Qualification for admission)— M.D./DNB Anaesthesiology from University recognized by MCI**

- **Duration of Course: 01 Year**

- **Number of Candidate: 02 (Two)**

Detailed Syllabus

I. BASIC SCIENCES

ANATOMY Cardiac: Embryology, development of heart, pulmonary and vascular anatomy, coronary artery anatomy

PHYSIOLOGY Cardiac : Cellular Physiology, Haemodynamics, Autonomic nervous system, Cardiac functions, Blood Physiology, Coagulation action potential, Cardiac arrhythmia

Pulmonary : Open & Closed chest ventilation. Ventilation/perfusion mismatch.

Pulmonary airway mechanics, one lung ventilation. Thoracotomy and pulmonary physiology. Renal, Hepatic, CNS, Endocrinal System, others, metabolic effects of surgery. Endocrines response to anaesthesia and surgery

PATHOPHYSIOLOGY : Heart Failure, Congenital defects, COAD, Cardiopulmonary reserves, acquired cardiac & pulmonary diseases. Vascular pathology.

Immunological response metabolic response during CPB

PHARMACOLOGY : Total circulatory arrest, Pharmaco Kinetics & Pharmacodynamics

of Anaesthetic and Vasoactive drugs Biochemical reactions, applied concepts. Drugs related to anaesthesia practice Cardiovascular drugs.

Current antibiotics for ICU use bronchodilator. Antiarrhythmic drugs, nitric oxide

PHYSICS : Basic concepts, Analysing, measuring & monitoring devices, electronics, computing of patients data. Laser in cardiac surgery, robotic technique

Equipment: Computer application, Maintenance monitoring techniques, Equipment in OT, Equipment for transport of patients, ICU equipment

II. CLINICAL SCIENCES

Anaesthesia for Cardio-thoracic & Vascular Surgery:- or diagnostic procedures in adults & Paediatric age groups.

Anaesthesia for - Cardiac Surgery : For closed & Open heart surgery.

Vascular Surgery : Aortic surgery, carotid artery surgery.

Course and Curriculum of PDCC Cardiac-Anaesthesiology

PAEDIATRIC : Basic haemodynamics, palliative procedures, Pre-op. preparations & special care in monitoring, Fluid balance & airway management

- Anaesthesia for neonatal complex cardiac surgery

- Anaesthesia management for re-surgery

- Paediatric diagnostic procedures in Cath Lab & echocardiography

- Invasive therapeutic techniques like ASD devices, stent in major vessels, coil embolization

ADULT : Anaesthesia for ischemic heart disease, valvular heart disease, vascular disease, adult congenital heart surgery

- Electrophysiological & Arrhythmia surgery. Heart transplant, heart lung transplant, ventilator assets devices

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PROFESSOR & HEAD
Deptt. of Anaesthesiology
K.G.'s Medical University U.P
LUCKNOW-226 003

Amk

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Deptt. of Anaesthesiology
K.G.'s Medical University U.P,
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- Anaesthetic techniques for pulmonary surgery Diagnostic & elective.
- Emergency procedures for lung surgery. One - Lung anaesthesia, Ventilation, Physiotherapy (gas exchange & airway dynamics)
- Anaesthesia during emergency, surgery and direct emerging from cath lab after cath lab complication
- Anaesthesia in patients for diagnostic & palliative procedures in Cardiology, Radiology cath LAB (outside operative rooms). Invasive cardiology procedure
- Anaesthesia management of re-surgery
- Management for Post Op. ventilation care, prolonged ventilation, weaning, Control of Pain - its techniques & agents, used. Postoperative pain management
- Intra op. monitoring, PAC, Cardiac output coagulation monitoring

CARDIOPULMONARY BYPASS

- _ Perfusion technology, principles, equipment, oxygenators, haemofiltration
- _ Hypothermia, techniques & protocols
- _ Myocardial Protection
- _ Haemodilatation
- _ Anticoagulation, Pharmacology, monitoring methods
- _ Side-effects, complications & management
- _ Subsystem care - cerebral, Renal Hepatic protection
- Cerebral protection, cerebral monitoring.
- Total circulatory arrest, left heart bypass
- Anaesthesia management during CPB
- Pharmacokinetics & pharmacodynamics of drugs during CPB

INTENSIVE CARE MANAGEMENT

- _ Protocols for sub-system care, cerebral, Renal, Hepatic & others
- _ Ventilatory Care, weaning of Ventilatory support. Parenteral Nutrition, control of infection
- _ End stage renal failure, bedside dialysis techniques
- _ Postoperative management of single ventricular repair
- _ Hepatic failure
- _ ICU monitoring technique in postoperative pain management
- _ ICU Management, especially after neonatal surgery – ventilatory support in neonates, ECMO programme for neonates and children
- _ Intensive coronary care
- _ Cerebral monitoring

III ALLIED SCIENCES

Cardiac Surgery : Surgical technique, curative surgery, Palliative procedures Risk evaluation, prognosis, Robotic surgery.

Cardiology and cardiac : Pre-op. evaluation, patho-physiology, Electrophysiology, Diagnostic Radiology Procedures-ECG, x-ray Angiography, Cardiac Cath, Doppler's. Echo-Cardiography, Nuclear studies & their interpretations & their Treatment of disease Special procedures : Pacing, Cardioversion, PTCA, etc.

Automated cardioverters, invasive procedures for arrhythmia i.e. ablation of abnormal pathway.

Biotechnology : Various mechanical & electronic equip. Animal experiments, materials used for CPB techniques, VAD. IABP, Laser for TMR, Ecmo

Statistics : Statistical technique

Hospital Administration : Sterilization/Gas supply, equipment maintenance

Monitoring in Anaesthesia

Invasive & Non-Invasive monitoring techniques for Pre-peri & Post-operative periods in cardiothoracic centre :

- _ Understanding of basic concepts of monitoring
- _ Indications, cost effectiveness, complications
- _ Equipment usage & knowledge of accessories

Amr
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PROFESSOR & HEAD
Deptt. of Anaesthesiology
K.G.'s Medical University U.P.
LUCKNOW-226 003

Dr. Anand

PROFESSOR
Deptt. of Anaesthesiology
K.G.'s Medical University U.P.
LUCKNOW-226 003

Knowledge of the following monitoring —

Cardiac functions : ECG, ABP, Vent. Pressures, Calculation of cardiac output, resistance, Flow, Echo, Dopplers & (CAT, PET, NMR)

Pulmonary functions : PFT, Blood gases, Acid-base Pulm. Airway mechanics.

Coagulation Profile : Temp. renal, B. Sugar, Enzymes, ACT Heparin & Protomine regulation, thromboelastography.

Neuromuscular blockade : And other Recent advances in monitoring. BIS cerebral oximetry, evoked potential monitoring, CNS monitoring during CPB.

RECENT ADVANCES

Knowledge of recent developments in field of Cardio thoracic & Vascular surgery

_ Cardiology - PTCA, Balloon embolectomy etc.

_ Heart - lung transplant - physiology, pharmacology (Anaesthetic consideration) - Donor - recipient selection

_ Immunosuppression etc.

_ Cardiac assisting devices - Artificial heart, IABP, LHAD

_ Advances Pulm. support - ECMO, H.F. Ventilation

_ Blood substitutes

_ Current advances and concepts in drugs, equipments, and monitoring methods.

As per recommendation of the committee under the chairmanship of HOD, as following. They will also coordinate and monitor the implementation of the programme mentioned in this. The training programme shall be updated as and when required.

The trainer shall maintain a log book of the work assigned to them.



(Dr. Anita Malik)
Professor & Head

Department of Anaesthesia
PROFESSOR & HEAD
Deptt. of Anaesthesiology
K.G.'s Medical University U.P.
LUCKNOW-226 003



(Dr. Dinesh Kaushal)
Nodal Officer

PDCC Paediatric Anaesthesia
PROFESSOR
Deptt. of Anaesthesiology
K.G.'s Medical University U.P.
LUCKNOW-226 003