IAPA Fellowship in Paediatric Anaesthesia (1 Year)
Competency-Based National Curriculum

1. GOAL OF THE PROGRAM

The goal of the IAPA one-year Paediatric Anaesthesia Fellowship is to train qualified anaesthesiologists to acquire the knowledge, clinical skills, professional attitudes, and decision-making ability required to provide safe, independent, evidence-based, and comprehensive perioperative care to neonates, infants, and children across a variety of clinical settings, including those with complex medical and surgical conditions.

At the end of the program, the fellow should be able to:

1. Provide Comprehensive Clinical care

- Delivering independent paediatric anaesthesia care (neonates, infants and children)
- Manage routine and high-risk paediatric patients

2. Ensure patient safety and crisis management

- Recognise and manage difficult airway
- Handling perioperative emergencies and crises
- Uses standard protocols and checklists

3. Demonstrate procedural competency
4. Apply scientific knowledge

- Integrate the knowledge of paediatric physiology and pharmacology in daily practice
- Provide effective pain management including regional anaesthesia

5. Practicing with professionalism, ethical responsibility, and resource awareness

- Communicating effectively with children, parents, and multidisciplinary teams

6. Engage in Academic and Research activities

2. DOMAINS OF LEARNING

The curriculum is structured across three core domains:

2.1 Cognitive Domain (Knowledge)

The fellow should acquire comprehensive knowledge of:

Basic Sciences

- Neonatal and paediatric physiology
- Developmental anatomy
- Dosing and pharmacology
- Transition from foetal to neonatal life

Clinical Paediatric Anaesthesia

- Preoperative assessment and risk stratification
- Paediatric airway assessment and management
- Anaesthesia techniques (inhalational, intravenous, TIVA)
- Fluid, electrolyte, and blood management
- Temperature regulation
- Ventilatory strategies

Subspecialty Areas

- Neonatal anaesthesia (e.g., TEF, CDH, abdominal emergencies)
- General paediatric surgery
- Paediatric orthopaedic procedures
- Paediatric cardiac physiology and anaesthesia implications
- Neurosurgery and raised ICP
- Thoracic anaesthesia and lung isolation
- Anaesthesia for syndromic children
- Anaesthesia for shared airway (ENT)
- Ophthalmic/ Dental/ Plastic procedures

Pain and Regional Anaesthesia

- Pain physiology
- Multimodal analgesia
- Neuraxial and peripheral nerve blocks
- Ultrasound-guided regional techniques

Critical Care and Emergencies

- Paediatric Advanced Life Support (PALS)
- Paediatric Perioperative Life Support (PPLS)
- Neonatal resuscitation
- Management of sepsis, shock, and respiratory failure
- Crisis management (laryngospasm, anaphylaxis, MH etc.)

NORA (Non-Operating Room Anaesthesia)

- MRI, CT, Cath lab, endoscopy
- Sedation protocols and safety measures

2.2 Affective Domain (Attitude, Communication & Professionalism)

The fellow should demonstrate:

- Effective communication with children and parents
- Ability to obtain valid informed consent and assent
- Maintain patient confidentiality, respect and dignity of the child
- Empathy and sensitivity to family concerns and cultural diversity
- Teamwork with surgeons, paediatricians, nurses, and technicians
- Participate in team briefings and WHO surgical safety checklist
- Ethical practice and patient-centred care
- Responsibility in clinical decision-making and resource utilization
- Ability to recognize, report, and learn from critical incidents and errors
- Professional conduct during stressful and crisis situations

- Commitment to learning and teaching

2.3 Psychomotor Domain (Skills)

The fellow should develop competency in:

Airway Management skills

- Mask ventilation, LMA insertion, endotracheal intubation (neonate, infants, children)
- Management of difficult airway
- Use of videolaryngoscopes
- Fibreoptic techniques (exposure-based)

Vascular Access

- Peripheral IV cannulation
- Central venous catheterization
- Intraosseous access
- Arterial Line insertion
- Ultrasound-guided technique

Drug administration and **Anaesthesia techniques**

- Safe drug dosing (weight based)
- Inhalational induction technique
- Intravenous induction technique
- Maintenance of anaesthesia

Monitoring and Equipment handling

- ASA Standard monitoring and interpretation
- Use of Anaesthesia workstation, infusion pumps, ventilators, Arterial blood gas analysis

Regional Anaesthesia skills

- Caudal epidural block
- Spinal anaesthesia (where feasible)
- Epidural techniques (where feasible)
- Peripheral nerve blocks and fascial plane blocks
- Ultrasound guided techniques

Perioperative Management

- Fluid, electrolyte and acid base management (goal directed fluid therapy)
- Blood transfusion management
- Temperature management
- Management of intraoperative complications/ crisis

Critical Care Skills

- Hemodynamic monitoring and support
- Ventilation management
- Sedation, analgesia and delirium management
- Infection control
- Resuscitation (PALS/NALS)
- Crisis management
- Breaking bad news

3. BROAD SYLLABUS

The curriculum covers the following major areas:

3.1 Basic Sciences

- Embryology and developmental physiology
- System-wise paediatric physiology
- Paediatric pharmacology (pharmacokinetics/ pharmacodynamics)
- Developmental anatomy

- Fluid, electrolyte and acid base balance
- Thermoregulation in neonates and children

3.2 Preoperative Assessment

- History and physical examination
- Risk stratification
- Management of comorbidities (URI, CHD, asthma, prematurity, syndromic children, etc.)
- Fasting guidelines and premedication
- Behavioural and anxiety management
- Preoperative optimization and parental counselling
- Informed consent and ethical considerations

3.3 Equipment & Monitoring

- Paediatric airway equipment
- Breathing circuits
- Anaesthesia workstations and ventilators
- Monitoring
    - Basic: ECG, SpO_2, NIBP, temperature, $EtCO_2$
    - Advanced: invasive arterial BP, CVP, plethysmography, neuromuscular monitor, BIS
- Equipment safety checklists and troubleshooting
- Use of defibrillators
- Use of ultrasound

3.4 Airway Management

- Normal and difficult airway assessment and management
- Congenital airway anomalies
- Advanced airway techniques (Fiberoptic intubation, hybrid techniques)
- Airway crisis management
- Extubation strategies (LMA/ Endotracheal tube)

3.5 Resuscitation & Critical Care

- PALS and neonatal resuscitation
- Management of shock, sepsis, and respiratory failure
- ICU principles and ventilator management
- Hemodynamic monitoring and use of inotropes/ vasopressors
- Fluid, electrolyte and acid base management
- Sedation and analgesia in ICU
- Renal support and basics of dialysis
- Infection control practices and ICU protocols

3.6 Pain Management

- Pain assessment tools in children
- Management of acute and chronic pain
- Multimodal analgesia
- Regional anaesthesia techniques
- Patient controlled analgesia and epidural analgesia

3.7 Surgical Subspecialties

- General paediatric surgery
- ENT and airway surgery
- Neurosurgery
- Orthopaedics
- Cardiac and thoracic surgery
- Ophthalmology, dental, plastic surgery
- Minimally invasive surgery

3.8 NORA

- Sedation and anaesthesia outside OT
- Sedation and Safety protocols
- Equipment considerations (MRI- compatible devices)

4. CLINICAL ROTATIONS

The fellow should be rotated in all surgical specialities and ICU's to gain adequate exposure to various cases and specialties.

5. TEACHING AND LEARNING METHODS

- Case-based discussions (weekly): emphasis on clinical reasoning, decision making and problem solving
- Didactic lectures/ seminars (monthly): core topics
- Journal club (monthly): critical appraisal
- Bedside/OT teaching (daily): emphasis on procedural skills, decision making and real-time feedback
- Simulation-based learning: periodic simulation training and crisis resource management drills
- Audit and Research activities

6. ASSESSMENT METHODS

6.1 Formative Assessment (Continuous)

- Direct observation during clinical work
- Case presentations and discussions
- Evaluation of procedural skills using direct observation of procedural skills (DOPS)
- Communication and professionalism assessment (360 degree feedback)
- Log book assessment of clinical exposure, teaching activities and procedural competencies
- Workplace assessments at regular intervals

6.2 Summative Assessment (Exit examination at the end of Fellowship)

Written Examination

- MCQs / Short answer questions
- Emphasis on applied knowledge and clinical problem solving

Clinical Examination

- One long case (comprehensive perioperative assessment and management)
- Two short cases (focused clinical evaluation and management)
- Objective Structured Clinical Examination (OSCE) stations (crisis scenarios/ interpretation skills)

Viva Voce

- Drugs
- Equipment
- Monitoring (ABG, X-ray, capnography, ECG interpretation)
- Recent advances
- Evidence based practice

Professional Attributes

- Communication skills
- Professional conduct and ethics
- Teamwork and leadership abilities

Log book submission (mandatory)

7. RESEARCH COMPONENT

Each fellow is required to:

- Conduct one clinical research study/ audit/ or quality improvement project relevant to paediatric anaesthesia
- Present findings at a scientific conference and or submit for publication

8. INTERIM ASSESSMENT

- A formative assessment will be conducted by IAPA in online mode prior to the EXIT examination
- Format includes
    - Crisis management

    - Case-based management
    - OSCE
- Performance feedback will be provided to course coordinators to guide further learning and areas of improvement
- Participation in the assessment is mandatory and marks will be included in the Exit examination.