



**PRAVARA INSTITUTE OF MEDICAL SCIENCES  
(DEEMED TO BE UNIVERSITY)**

**Loni, Tal. Rahata, Dist. Ahmednagar 413736  
NAAC Re-accredited with 'A' Grade**

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**SYLLABUS**

**Title: FELLOWSHIP IN PEDIATRIC INTENSIVE CARE**  
**Department of Pediatrics, Rural Medical College, Loni**

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**1. Title:- "Fellowship in Pediatric Intensive Care"**

**2. Objectives:**

To provide basic and advanced training in pediatric emergency/intensive/critical care, to enhance the clinical skills of Post graduate Pediatricians, who will be able to provide clinical care of highest order to critically sick children.

**3. Year & Date of Implementation:** 1<sup>st</sup> Sept. 2019.

**4. Eligibility Criteria:** Diploma in Child Health, MD, DNB (Pediatrics).

**5. Intake:** 1 per batch

**6. Fee:** Tuition fee Rs. 1, 00,000/- (Rs. One Lakh)

**7. Academic calendar –** Sept. – August

**8. Duration of programme:**

**i. For full Time Students:**

- a. One year for MD, DNB (Pediatrics) candidates.
- b. One and half year for DCH candidates.

**ii. For Part Timers:** (i.e. Employees at PIMS (DU)/Constituents College): Same duration as mentioned above, provided they work at RMC/ PRH for extra two hours on all working days and full day on Saturday, apart from regular duty hours. Otherwise the Duration for Staff with PG Degree holders, the duration shall be one and half Year & for P.G. Diploma holders, it will be 2 Years.

## **9. Admission Process:-**

- University will issue the Notification.
- Eligible students will apply for the fellowship programme.
- The HoI shall process the applications as per eligibility and recommend to University for approval.
- The University will announce the list of selected candidates.
- Accordingly, HOI shall admit the applicant after verifying all the necessary documents & records by accepting payment of fees prescribed & other aspects as per normal procedure.

## **10. Attendance:**

Minimum of 80% and above calculated for academic term of 6 months. The leave policy of PG student is applicable.

## **11. Teaching:**

The Time Table and Academic Schedule followed for learning process of PG student will be applicable. It shall include clinical postings/field postings/OPD-IPD-Casualty, ICU Posting/Posting to Allied support & Diagnostic Departments/Wards Round/UG-PG teaching schedule/CM/CPC/and so on.

The weekly teaching schedule also includes Journal club, Case presentations, Seminars, Group Discussions, PBL, CBL, CAL, SDL, Faculty lecture, Guest lecture, Medical Campus inter departmental teaching activities, H/V integrated teaching, panel discussions and so on.

## **12. Content/syllabus of the Programme:**

### **i. Basic training in Pediatric emergencies and intensive care:**

- Emergency and critical Pediatrics: Scope and need
- Pediatric emergency resuscitation and Pediatric advanced life support and lifesaving procedures.
- Common Pediatric emergencies
- Shock
- Sepsis and Hospital acquired infections
- Convulsion and Status epileptics
- Respiratory distress
- Cardiac emergencies including arrhythmias, CCF
- Neurological emergencies including ICP and coning
- Approach in a case of suspected brain death
- Taking care of a PICU child: basic nursing
- Taking care of a PICU child: anesthesia and analgesia
- Trauma, head injury and other surgical emergencies
- Transporting a sick child
- Safety and Bio waste managements
- Investigations in PICU: including radiology

- PRISM – PIM Score
- Record keeping in PICU

**ii. Clinical skills in procedures, understanding equipment's, monitoring and resuscitation**

- A sepsis and anesthesia and decision making in PICU emergency procedures
- Procedures in emergency medicine: tracheotomy, bronchoscopy, Needle drainage, Rapid IV access
- Rapid sequence intubation
- Vascular/Central line access: Jugular, subclavian, femoral and cut down access
- Arterial catheterization
- Intraosseus line
- Ventricular tap and VP shunt
- Pleuro and peritoneocentesis
- Peritoneal dialysis
- Difficult intubations
- Monitoring : Needs, modalities and action
- Resuscitation
- Pediatric advanced life support: CPR, intubation and medicines
- Monitoring a resuscitated child

**Equipments:-**

- Invasive and noninvasive equipment's
- Multichannel Monitors, Defibrillators
- Nebulizer, suction, O2 delivery systems
- Ventilators
- Machines: ECG, Doppler, 2D-Echo, EEG
- Maintenance and record keeping

**iii. Mechanical Ventilation**

- Basic Physiology of respiratory system in a child
- Need for artificial ventilation
- Modalities and machines: know your ventilators
- ABG analysis: ABG actions Ventilations modes and needs, Airway ventilations
- Ventilation graphics, HFO, Trouble shootings
- Controlled ventilations, Assist ventilations
- Care of a ventilated child: Weaning from ventilators
- CPAP, Tracheotomy
- VAP
- ARDS and its management

**iv. Research programmes, teaching skills**

- Clinical Core competency skills: development and assessment
- Research dissertation completion
- Organizing a CME
- Representation in conferences
- Writing a paper and basics of statistics
- Staying in touch and staying updated: Virtual PICU

**v. Designing a PICU : replica creation**

- Understanding a need for PICU at periphery
- Point of Care PICU
- PICU designing : budget, management and maintenance
- Implementing a PICU protocol and a teaching program

**13. Curriculum topics:-**

**i. Respiratory system**

- **Applied anatomy and physiology**
- Anatomy of the respiratory tract in children including developmental aspects
- Respiratory physiology and mechanics of breathing
- Pathophysiology of acute respiratory failure
- Type 1 failure Type 2 failure Diffusion of defects V/Q mismatch Shunts
- **Clinical recognition of respiratory distress**
- Respiratory failure Assessment of oxygenation status PaO<sub>2</sub>/FiO<sub>2</sub> ratios P (A-a) O<sub>2</sub> Q<sub>s</sub>/Q<sub>t</sub>
- **Causes of acute respiratory failure**
- Upper airway problems, LTB, Epiglottitis, Laryngeal edema, Retropharyngeal abscess, Congenital anomalies, Acquired damage following intubation
- **Lower airway problems** Asthma, Bronchiolitis Parenchymal diseases  
Pneumonias, Aspiration, ARDS, Pulmonary edema, Atelectasis,
- Pneumothorax and Air-leak, Empyema
- **Common respiratory pathogens**
- **Chemical pneumonias** – Kerosene
- Chronic problems BPD Chronic lung injury
- Cystic fibrosis
- O<sub>2</sub> therapy
- Indication Devices Monitoring Toxicity
- Bag and Mask ventilation
- Endotracheal intubation

- Plain Cuffed
- Suction
- Nebulisation
- Advanced airway
- LMA Cricothyrotomy Tracheotomy
- Ventilation
- Ventilators PCV VC Modes Humidification
- Trigger
- HME Alarms Intrinsic PEEP Graphics
- **Disease specific ventilation**
- ARDS network trial Ventilating ARDS Ventilating Asthma RDS
- Meconium aspiration PPHN Pulmonary airleak Pulmonary hemorrhage
- Lung protective strategies
- **Advanced strategies**
- High frequency ventilation
- Pulse oximetry, Capnography, Blood gases
- Special procedures
- Fiberoptic bronchoscopy BAL
- Iatrogenic issues
- Barotrauma, Ventilator associated pneumonia

## ii. Cardio Vascular system

- Applied anatomy and physiology
- SHOCK
- Hypovolemic, Cardiogenic, Distributive
- Clinical signs
- Decompensated / Compensated
- Pathophysiology
- **Therapy**
- Fluid therapy Crystalliods Colloids
- Inotropes, Dopamine, Dobutamine, Epinephrine, Norepinephrine, Vasopressin, AmrinoneMilrinone
- Role of steroids
- **Septic shock**
- Pathophysiology Management Other therapies
- **Vascular access**
- Intraosseous, CVA, CVP monitoring Arterial pressure monitoring
- **Monitoring**
- SVO<sub>2</sub> monitoring Goal directed therapy Lactate

## iii. Hematology

- Basic Sciences applied to Hematology

- DIC/Intravascular hemolysis
- Febrile neutropenia
- Tumor lysis Syndrome
- Superior vena cava obstruction, Hemophilia

**iv. Liver**

- Basic Sciences applied to Gastrointestinal and Hepatobiliary system
- Fulminant Hepatic failure, Portal hypertension with bleeding varices, Budd Chiari Syndrome Wilson's disease, Hepatitis, Reye's syndrome, Metabolic disorders with significant liver involvement, Transplantation

**v. Renal**

- Basic Sciences applied to Genito- urinary system
- Acute Renal Failure,
- Hemolytic Uremic Syndrome
- Glomerulo Nephritis
- Hypertensive encephalopathy
- Renal Vein thrombosis
- Life threatening dyselectrolytemia
- Tubular disorders presenting as critical illness
- Nephrotoxic drugs Dose adjustments
- Renal Replacement Therapy – Peritoneal Dialysis, Hemodialysis, Plasmapheresis

**vi. Metabolic**

- Acid base disturbances Urea cycle disorders Organic acedmias
- Hypoglycemia
- Diabetic Keto Acidosis
- Neuro-metabolic disorders
- Metabolic liver diseases
- Approach to suspected IEM

**vii. Nervous system**

- Basic Sciences applied to Nervous system
- GBS, Polio, Tetanus, Botulinism, Diphtheria
- Encephalitis, Herpes, Pyogenic Meningitis
- TB meningitis Raised ICP
- Coma
- Status epilepticus

**viii. Trauma / Poisoning**

- TBI, Multiple trauma, Drowning, Burns
- Poisonings – General
- Organophosphorous
- Kerosene, Corrosives
- Barbiturates, TCA, Iron, Salicylates, Digoxin, Paracetamol
- Snake bites
- Scorpion stings
- Bee sting

**ix. Infectious diseases**

- HIV, Dengue, HINI
- Leptospirosis, Malaria, Typhoid
- TB, Staphylococcal infections
- Pseudomonas, Fungal, Nosocomial
- Antimicrobials in ICU
- Classes of drugs
- Bacterial resistance – MRSA, VRE, ESBL
- Antivirals
- Antifungals Pharmacokinetics and pharmacodynamics

**x. Nutrition's**

- Enteral/Total Parenteral Nutrition

**xi. Ethics**

- Brain death
- DNR Dying child Organ donation
- Dealing with parents and caretakers

**x. Interpretation of investigations:**

- Laboratory – Blood and Body fluids
- Radiology – X-ray, CT, MRI
- ECG, EEG
- ABG
- Capnography
- CVP waveforms
- Arterial pressure waveforms

**xii. Medical statistics**

- Research methodologies
- Guidelines

**xiii. Procedural skills**

- Bag and Mask ventilation, CPR
- Endotracheal intubation (cuffed and uncuffed tubes)
- ET suction
- Care of tracheostomy
- ICD insertion
- Intraosseus line insertion
- Central venous line insertion
- Arterial cannulation
- Pericardiocentesis
- Peritoneal Dialysis
- Aspiration/Biopsy
- Synchronised cardio version
- Defibrillation
- Administration of Adenosine

**xiv. Contents:**

<b>Hours</b>	<b>Teaching Strategies</b>	<b>Credits</b>
30 Hours	Lectures on Important Topics	3 credits
20 Hours	Guest Lectures by Expert Faculties	
150 Hours	Teaching Clinical Rounds (Routine/Grand)	9 credits
100 Hours	Quarterly Assignments, Seminar/Journal Club/Case Presentations – twice weekly	8 credits
300 Hours	Hands on Experience	10 credits
300 Hours	Clinical Work / Research Activities	10 credits

**14. Curriculum Delivery / Transaction****i) Lectures:**

These will be held once a week and will be delivered either by a faculty member or by a specialist/Guest Faculty in the field of Intensive/Critical care.

**ii) Seminars and journal clubs:**

Candidates are required to present I seminar and I journal club every alternate month.

**iii) Case presentations:**

This will be held every month. Experts from other specialties may be called for these discussions. Each student is expected to maintain a journal.

**iv) Administrative responsibilities:**

The candidate is expected to actively participate in maintenance of PICU equipment/s.

**v) Patient care, teaching and research:**



The candidate is expected to attend indoor calls for referrals made to the PICU from wards and emergency medical services. It is expected that the fellowship candidates will contribute to patient care in the Pediatric ward, Pediatric critical care unit and emergency Pediatric service, develop SOPs or protocols for diagnosis and management, make ethics committee, submissions, interact/liason with ethics committees and any agency involved in research projects undertaken in the PICU as and when needed, fill case record forms, and participate in audits and inspections. They are also required to give lectures on selected topics to the III<sup>rd</sup> year undergraduate medical students and postgraduate Pediatric students.

### **15. Programme outcome (Expected):**

MD Pediatrics & DCH qualified students can further augment their skill in all aspects of pediatric intensive/critical care, especially Ventilation. The candidate will be able to work as Pediatric Intensivist in Healthcare establishments.

### **16. Mandatory Fulfillment:**

- i.** Presentation of Journal Articles in Journal club- 6 Articles per year.
- ii.** Presentation of Cases- 6 per Year and Medical skill lab/ Simulation Centre-6 sessions per Year (Patient Laboratory/skill lab/simulation based learning as applicable to PG Students)
- iii.** Presentation of Seminars- (6 per Year), Group Discussion (6 Per Year),
- iv.** Mandatory Participation in the UG PG Teaching. (6 per Year), Presentation of Assignment -6 per Year. Research Methodology workshop (One)
- v.** Medical Camps/CME/CPE/CM.
- vi.** Participation & presentation of an Research article in Seminars/Conferences /Workshops etc. & Publication of a Research Paper. (Acceptance for publications or Published).

### **17. Maintenance of Log Book duly signed by HOD:**

Note- Each day, PG teaching activity or presentations as mentioned above shall include any one of the six schedules-1) Journal club, 2) Case presentation, 3) Seminar-Group Discussion, 4) Lecture by faculty, 5) CM/CME/CPE, 6) Guest lecture.

(Teaching – Learning Activity: - Similar to PG student of the Dept.)

## 18. Assessment and Evaluation:

- i. Evaluation:** At the end of one year for MD & DNB candidates.  
At the end of one and half year for DCH candidates
- ii. Internal Assessment-** At the Department Level
- Once in 3 months/ Quarterly
  - Internal Evaluation be done by the PG Teacher of the Dept, HoD being the Chairman for CIA.
  - Log Book shall be maintained.
- iii. University Level Examination (Rules as per PG Examination), to be conducted by COE.**
- Eligibility 80 % Attendance is compulsory and must have satisfactory progress Report of CIA (Continues Internal Assessment) duly signed and certified by HoD & other PG teacher.
  - There shall be Board of Examination – HOD as Chairman & PG Guides as Internal Examiners & External Examiners as members, Normally the External Examiners shall set the papers. They are moderated by the HoD/Chairman BoE. The Examinations shall be conducted by the COE PIMS (DU) as per Examination manual.
- iv. Scheme of University Examination:**  
Theory (200 Marks) + Practical (200 Marks) Total = 400 Marks.
- Theory Examination- 200 Marks.  
(Each of 100 Marks and 3 Hours Duration)
- |   |   |           |
|---|---|-----------|
| 2 Long Answer Questions of 20 Marks each  | = | 40 Marks. |
| 6 Short Answer Questions of 10 Marks each | = | 60 Marks. |
- v. Paper wise distribution of Syllabus/Topics:**
- Paper I– Basic Sciences applied to Pediatric Intensive Care, General Pediatrics and Community Pediatrics
- Paper II- Advanced Pediatric Intensive Care including Systemic Pediatrics, Pediatric Surgery and Critical Care
- vi. Title of Paper's:**
- Paper –I: Exit Theory Examination for Fellowship in Pediatric Intensive Care
- Paper –II: Exit Theory Examination for Fellowship in Pediatric Intensive Care

**vii. Practical's /Clinical Examination:** 200 marks.

- i) One long Case/ long experiment -50 Marks
- ii) Three Short Cases (3x30) -90 Marks
- iii) Viva Voce/ Orals/OSPE/Spottersetc -60 Marks

**viii. Number of Evaluators / Examiners:**

- A. Theory- Double Evaluation. (One internal & One External) and the average of the two evaluations shall be awarded. If the difference is more than 15%, then to follow third valuation & average of nearest two scores has to be taken.
- B. Practical's/Clinical Examination :- Two Examiners  
Internal Examiner-(PG Teacher In the said specialization)  
External Examiner - (PG Teacher In the said specialization of Other University, Preferably of other States)

**ix. Minimum for Passing:**

- A. Min 50% in Theory papers (Each paper minimum is 40%)
- B. Min 50% in Practical /Clinical & Viva Voce
- C. Overall is 50% of Theory & Practical/Clinical.
- D. Award of class:- Min 50% to 59.5% - Second class  
60 to 74.5% - I Class.  
Above 75% - I Class with Distinction

**19. Grievance Redressal and Appeals  
mechanitary/Mechanism:**

HOD, Dept. of Pediatrics and Dean, Rural Medical College  
Appellate Authority – Registrar, PIMS –DU

**20. Saving clause:**

In case of difficulty, the decision of the authorities of PIMS (DU) shall be final.



# PRAVARA INSTITUTE OF MEDICAL SCIENCES (DEEMED TO BE UNIVERSITY)

(University Established under Section 3 of the UGC Act 1956)  
Re- accredited by N.A.A.C. with `A` Grade

## Application form for Admission

Academic Year: - 20\_\_\_\_/ 20\_\_\_\_

**Constituent College:**      **Rural Medical College**  
Department of Pediatrics

Photo of  
candidate  
with  
Signature of  
HOI

To

**The Competent Authority,  
Pravara Institute of Medical Sciences  
Deemed to be University**

Sir,

I wish to apply for admission to \_\_\_\_\_.

The information submitted below by me, is true to the best of my knowledge and belief.

### PERSONNEL INFORMATION

1. Name (In Block Letters) \_\_\_\_\_  
(First name)      (Middle name)      (Surname name)
2. Address for Correspondence (with Pin Code) \_\_\_\_\_
3. Contact Number: (Mob.) \_\_\_\_\_ (Telephone No.) \_\_\_\_\_
4. E-mail \_\_\_\_\_ Sex : Male/Female
5. Date of Birth \_\_\_\_\_, Marital Status : Single / Married
6. Religion : \_\_\_\_\_, Caste : \_\_\_\_\_, Nationality \_\_\_\_\_
7. Whether belongs to reserved Category : YES/NO, Category \_\_\_\_\_

### ACCADEMIC INFORMATION

1. UG Degree:- \_\_\_\_\_
2. Year of Passing:- \_\_\_\_\_
3. Name of Institute : \_\_\_\_\_
4. PG Degree:- \_\_\_\_\_
5. Year of Passing:- \_\_\_\_\_
6. Name of Institute : \_\_\_\_\_

**EXPERIENCE**

Sr. No.	Name of Institute	Designation	Period

(Signature of Candidate)

**UNDERTAKING**

I \_\_\_\_\_ D/S/O \_\_\_\_\_  
 Resident of \_\_\_\_\_ State of \_\_\_\_\_  
 duly do hereby covenant that: I have carefully read the concepts and rules regarding  
 admission to \_\_\_\_\_  
 and I am eligible for the admission.

I fully understand that my admission is provisional and is subjected to final approval and enrolment by the University.

I hereby agree to abide by the terms and conditions or the rules pertaining to admission as prescribed by the competent authorities and admit that they are binding upon me legally and legitimately.

I undertake to pay the Tuition and other fees fixed by the University. I undertake to observe and maintain a strict discipline as the student, and otherwise, in the college premises including hostel and campus.

I have paid the application fee of Rs. 1000/-. Receipt No : \_\_\_\_\_ dated \_\_/\_\_/20

(Signature of Candidate)

**Document to be attached:**

1. UG Passing Marks hit and Certificate
2. PG Passing Marks hit and Certificate
3. Professional Registration Certificate
4. Experience Certificate's
5. Date of Birth Proof
6. ID Proof
7. Cast Certificate if applicable

