

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR DM IN PAEDIATRIC NEUROLOGY

Preamble:

The goal of postgraduate education for the award of the postdoctoral degree in Pediatric Neurology (DM – Doctor of Medicine) is to bring out competent pediatric neurologists who shall recognize the health needs of the society provide quality health care and carry out professional obligations ethically to fulfill the objectives of national health policy. Pediatric Neurology has evolved as a separate discipline in India over the last 30 years requiring a different set of clinical approach, diagnostic and management skills and research as compared to adult Neurology.

This program shall primarily focus on training pediatricians (MD/equivalent degree) on scientific knowledge and management skills required to practice academic pediatric Neurology. During the training period they shall master the competencies in pediatric Neurology and basic medicine that are required for pediatric Neurology practice from the primary to tertiary level of health care system. In addition they should also acquire basic skills in teaching the medical and paramedical professionals, research skills, organizational competency and social health care capabilities. Thus the major components of the curriculum shall cover theoretical knowledge, practical and clinical skills, attitude skills and training in research methodology and social care.

SUBJECT SPECIFIC LEARNING OBJECTIVES

- 1. Clinical Skills:** The aim of the course is to impart thorough and comprehensive training to the candidate in the various aspects of the specialty to enable him:
 - To function as Faculty/consultant in the specialty
 - to plan and set up independent Pediatric Neurology Unit catering to clinical and investigative Pediatric Neurology

The trainee should be able to:

- i.) achieve competence in the neurological examination and neuro-developmental assessment of the newborn, infant, and older children,
- ii.) know the utility, limitations, and interpretation of the results of lumbar puncture, EEG, EMG, evoked potentials, Cranial US, CT, MRI, MRA, MR Spectroscopy, Cerebral Angiography, and Isotope scans.

2. Teaching skills:

The Pediatric Neurologist should have the skills of a teacher also. The DM candidates would be actively involved in teaching the undergraduate and post graduate students. They will take periodic teaching sessions for the nursing students. By the completion of two years they would be involved in the development of clinical neuro-evaluation protocols which would facilitate the diagnosis and management of many neurological illnesses. Their teaching skills will be assessed and shall form part of the internal assessment. The trainee will get competence in teaching in the following areas:

- Anatomy, physiology, and embryology of the central and peripheral nervous system.
- Pathophysiology, diagnosis, management, and prognoses of children presenting with developmental delay or regression, cerebral palsy, mental retardation, epilepsy, head injury, headache, stroke, metabolic disorders, neuromuscular problems and movement disorders in children.
- Acute management of seizures, coma, and raised intracranial pressure and other neurological emergencies including ventilation, plasmapheresis etc.
- Pharmacology of CNS medications

3. Research Methodology:

The post graduate student should develop competencies

- to develop protocols for conducting applied research in Neurosciences
- to understand basics of statistics for conducting research programmes and interpret of results of research studies.
- Able to conduct human behavior studies,
- Understand pharmaco- economics and non-linear mathematics in research studies.

They will also develop the basic skills required to perform clinical studies such as case reports and series, retrospective studies, and proposals for prospective studies. The candidate will be required to conduct at least one investigative project during the course and will have at least one publication in an indexed journal.

4. Group Approach:

An integral component of a Pediatric Neurology program is team-work, especially with neuro/epilepsy surgery and physical medicine and speech therapy and behavioral therapy. The residents will be encouraged

to conduct a formal joint neurology conference with the allied specialties once a week where the surgical and differently abled cases for the week will be formally discussed to formulate the management plan.

5. At the end of the course the student should be able to describe the following:

The trainee should be able to:

- a. Achieve competence in the neurological examination and neurodevelopmental assessment of the newborn, infant, and older children.
- b. Independently diagnose and manage all common neurological diseases in children
- c. Diagnose and manage neuro-developmental disorders
- d. Know the utility, limitations, and interpretation of the results of lumbar puncture, EEG, EMG, evoked potentials, Cranial US, CT, MRI, MRA, MR Spectroscopy, Cerebral Angiography, and Isotope scans
- e. Independently develop research projects/treatise relevant to discipline of Pediatric Neurology.

SUBJECT SPECIFIC THEORETICAL COMPETENCIES

The student should acquire the following theoretical competencies under cognitive and affective domains:

Cognitive Domain

1. Diagnosis of routine and complex clinical problems on the basis of pediatric neurology.
2. Interpret laboratory data in relation to clinical findings with reasonable accuracy
3. Should be able to teach pediatric neurology to undergraduates, postgraduates, nurses and paramedical staff including laboratory personnel.
4. To carry out research on pediatric neurology related topics.
5. Maintain accurate records of tests results for reasonable periods of time so that these may be retrieved as and when necessary
6. Make and record observations systematically that is of use for archival purpose and for furthering the knowledge of pediatric neurology.
7. Able to systematically write a paper and publish in a relevant journal.
8. Able to present a paper in a conference through an oral presentation and poster presentation. .
9. Able to supervise and work with subordinates and colleagues in a the department.

10. Subject himself/herself to continuing education and constantly update his/her knowledge of recent advances in Pediatric neurology and allied subjects.

Affective Domain

Communication with children and their parents

- Communication with children
- Communication with allied specialists
- Behavioural Skills
- Professionalism

Syllabus

The broad course contents are outlined below:

Learning in the DM course will eventually be self directed and will take place while working in the clinics and through interactions in the rounds. Apart from the faculty of the division of child neurology, members of the department faculty and members of other departments will also be involved in the didactic teaching of respective fields as follows.

(I) Development of the Infant and young child

- (a) Anatomy of Neurodevelopment
- (b) Physiology of Neurodevelopment
- (c) Assessment of normal development
- (d) Variations of the normal development
- (e) The abnormal child; Early markers of CP etc
- (f) Approach to a child with developmental delay

(II) CNS malformations

- (a) Normal anatomy of the CNS
- (b) Common CNS malformations
- (c) Surgical management of CNS malformations

(III) Seizure disorders in childhood

- (a) Seizures and non seizures
- (b) Febrile seizures
- (c) Classification /evaluation and management of epilepsy

- (d) Epileptic syndromes
- (e) Status epilepticus
- (f) Intractable epilepsy
- (g) EEG in seizure disorders
- (h) Surgical management of seizure disorders

(IV) Infections of the CNS

- (a) Acute pyogenic meningitis
- (b) Neonatal meningitis
- (c) Chronic meningitis
- (d) Brain abscess
- (e) Acute encephalitis
- (f) Cerebral malaria
- (g) Acute febrile encephalopathy
- (h) Neurocysticercosis
- (i) HIV encephalopathy
- (j) SSPE
- (k) Congenital infections
- (l) Laboratory diagnosis of CNS infections

(V) Autoimmune and Post infectious diseases

- (a) Primary demyelinating diseases of the CNS
- (b) ADEM, optic neuritis, acute transverse myelitis
- (c) Immunologically mediated diseases affecting the CNS gray matter , peripheral nervous system
- (d) Systemic vasculitides with nervous system manifestations

(VI) Neurodegenerative disorders (in co-ordination with the Departments of Pathology and Radio diagnosis)

- (a) Classification, Approach to a patient – gray matter, white matter
- (b) Diagnosis (including histopathology and neurogenetics)
- (c) Management
- (d) Antenatal counseling

(VII) Neurometabolic disorders including mitochondrial disorders (in co-ordination with the Departments of Pathology and Radiodiagnosis)

- (a) Classification, evaluation and approach to a patient
- (b) Neurogenetics
- (c) Management including antenatal counseling
- (d) Role of histopathology

(VIII) Chromosomal anomalies

- (a) Autosomal abnormalities
- (b) Sex chromosomal abnormalities
- (c) Chromosomal abnormalities in various dysmorphic syndromes

(IX) Toxic and nutritional disorders

- (a) Toxic disorders: lead, thallium, arsenic, mercury, aluminum, organic toxins, alcohol, bacterial toxins
- (b) nutritional disorders; protein energy malnutrition, Vitamin deficiencies, infantile tremor syndrome

(X) Neurocutaneous syndromes

Neurofibromatosis, Tuberous Sclerosis, Sturge Weber Syndrome etc.

(XI) Movement disorders

Movement disorders including cerebellar dysfunction Ataxias, chorea, dystonias, Tics etc

(XII) Cerebrovascular disorders

- (a) Arterial thrombosis
- (b) Venous thrombosis/embolism
- (c) Intracranial bleed
- (d) Stroke
- (e) Role of Radioimaging

(XIII) Neonatal neurology

- (a) Neonatal seizures
- (b) Hypoxic encephalopathy

- (c) Intraventricular Hemorrhage
- (d) Clinical neurological assessment
- (e) Role of EEG, Ultrasonography, CT scan
- (f) Neonatal seizures
- (g) ICH
- (h) Brain edema
- (i) Neuromuscular disorders
- (j) Degenerative disorders
- (k) CNS malformations

(XIV) Brain tumors

- (a) Features , Classification, Evaluation and management
- (b) Role of Radiotherapy

(XV) Spinal cord disorders

(XVI) Neuromuscular disorders

- (a) Evaluation and investigation
- (b) Histopathological changes in different disorders
- (c) Developmental disorders of muscle
- (d) Muscular dystrophies
- (e) Endocrine and metabolic myopathies
- (f) Inflammatory myopathies
- (g) Disorders of Neuromuscular transmission
- (h) Spinal muscle atrophy
- (i) Motor neuron disease
- (j) Autonomic neuropathies
- (k) Guillain Barre syndrome

(XVII) Mental Retardation

- (a) Assessment of intelligence quotient
- (b) Causes, Evaluation
- (c) Prevention / Role of antenatal counseling

(XVIII) Behavioral and Pervasive disorders (in co-ordination with the Departments of Psychiatry and with NGO's in the schools and field)

- (a) Attention Deficit Hyperactivity disorders (ADHD), Autistic spectrum Disorder
- (b) Learning disability

(XIX) Coma in Pediatric Patient /Brain Death

- (a) Intensive care (posting in PICU and lectures by Consultant PICU)
- (b) Monitoring of a comatose child
- (c) Coma in Pediatric population/ metabolic coma
- (d) Brain death

(XX) Neurological manifestations of systemic diseases

- (a) metabolic encephalopathies
- (b) disorders of acid/base / electrolyte disturbances
- (c) neurological complications of pulmonary, gastrointestinal, hepatic, renal, cardiac, hematological, neoplastic and endocrine diseases

(XXI) Neurological and Neurosurgical emergencies

- (a) Department of Neurosurgery
- (b) Neurological Emergencies

(XXII) Clinical Epidemiology

- (a) research methodology
- (b) biostatistics

(XXIII) Ethics in Medicine

(XXIV) Neuroinformatics

Use of media in education, computer information and technology, internet

(XXV) Rehabilitation in Pediatric Neurology

- (a) Principles of physiotherapy
- (b) Assistive devices
- (c) Treatment of spasticity
- (d) Occupational therapy

(XXVI) Community Pediatrics

- (a) National Programmes
- (b) AFP surveillance

(XXVII) Non epileptiform paroxysmal disorders and sleep disorders

- *headache
- *breath holding spells
- *syncope
- * sleep disorders

(XXVIII) Neuroendocrine and autonomic nervous system disorders

- (a) disorders of Hypothalamus & Pituitary gland in Childhood and Adolescence
- (b) disorders of micturition and defecation
- (c) disorders of autonomic nervous system

(XXIX) Neuroimaging

SUBJECT SPECIFIC PRACTICAL OR PRACTICE BASED COMPETENCIES

Psychomotor Domain

The student should acquire the following skills under the psychomotor domain:

Clinical Skills

1. Detailed history taking
2. Physical and Neurologic examination
3. Blood sampling; capillary, venous and arterial
4. Insertion of peripheral and central lines
5. Pediatric ventilation
6. Care of a comatose child
7. Physiotherapy

8. Lumbar puncture and CSF examination
9. Subdural tap
10. Ventricular tap
11. Neuroradiological procedures; skull x-ray, cranial ultrasound, CT scan, MRI, radio nuclide brain scan, cerebral angiography,
12. Electroencephalography
13. Evoked potentials; Visual evoked potential, Brainstem auditory evoked potential
14. Nerve conduction velocity
15. Electromyography
16. Muscle biopsy
17. Nerve biopsy
18. Neurometabolic screening tests (urine)

TEACHING AND LEARNING METHODS

Besides in-service activities a programme of bedside demonstrations, seminars, tutorials, group discussion, workshops, views and reviews, practice parameters, journal clubs and lectures is also organized.

4.2. TEACHING SCHEDULE

The following teaching schedule is prescribed for the course:

- | | |
|---|-----------------|
| The Outpatient service | - 3 days a week |
| Major ward rounds | - 3 days a week |
| D M Seminars | - Once a week |
| Practice parameters/views and reviews – on alternate weeks. | |
| Journal club | - Once a week |
| Neuroradiology (teaching session) | - Once a week |

Neurosurgery -1 month

During the Neurosurgery posting which is for one month, the candidate is required to attend all the operations and see for himself/herself, the surgical techniques. Postoperative care and complications and selection of cases for surgery are also taught.

Neuroradiology

The trainee is made conversant with the techniques and interpretation of carotid/vertebral angiography, CT scan and MRI scan, Hands on training on Neurosonogram, All these investigations are taught under the guidance of a neuroradiologist during one month. Neuroradiology investigations are conducted every day in the Radiology Department.

1. Regular Neuroradiology posting - 1 month
2. Weekly sessions - once a week

Neurophysiology

The resident is imparted training in the technique of application of EEG/EMG/evoked response electrodes. The resident learns to detect various types of artifacts in the EEG and evoked response results.

The resident also learns the handling of EEG/EMG and evoked response machines, under the guidance of technical assistant and the consultants. During the first year of the course, training is imparted in the interpretations of nerve conduction studies, EMG, evoked response and ultrasound studies. The resident is taught the interpretation of EEG records and reports under the guidance of senior colleagues and consultants in the beginning and independently in the second year of training.

The trainee is made well conversant with each and every aspect of known knowledge about Neuroanatomy, Neurophysiology, Neurochemistry, Neuroradiology, Neuropharmacology and Applied Pediatric Neurology by the end of two year training. Related neuropathology and neurosurgery is also taught through bedside, teaching rounds lectures, seminars and group discussions.

Child psychiatry and behavioral Pediatrics

One month posting in the concerned departments.

Neonatal Neurology

Two months training in neonatal ICU to get clinical experience in neonatal neurology and neonatal neurosonogram under the supervision of Neonatologist and consultant Neurologist.

Postings

During the period of training the candidates follow in-service training-cum-residency programme. The resident works as a Senior Resident and is given gradually increasing responsibility in decision making.

The clinical and investigative aspects of Pediatric Neurology and its allied specialties are Neuroanatomy, Neuropsychiatry, Neuropathology, Neurophysiology, Neurochemistry, Neuroradiology, Neuroanaesthesiology, Neurorehabilitation and Neurosurgery. The day-to-day work of the trainees is supervised by the Consultants of the Department of Pediatric Neurology.

The posting is so organized that the trainee gets posted in various areas of the department like OPD, wards, laboratories etc. He/She participates in the consultation service provided by the department to the Institute.

The trainee will be posted in different specialities as follows:

Pediatric Neurology and Clinical Neurophysiology - 24 months

Trainees will be posted in Pediatric Neurology casualty, ward & ICU for a period of 28 months. They will be given specialty postings as follows during the second year of their Academic Training

Neonatal Neurology	- 1 month	
Neurology (adult)	- 3 months	
Neurosurgery/ Neuropathology	- 1 month	
Neuroradiology	- 1 month	
Child psychiatry	- 1 month	
Child development centre	- 1 month	
PMR- 1 month		} -3 months
Research and statistics (first year)		
Rural care / hospital administration		
Conferences, work shop etc other leaves etc.		
Examination		

Communication, education training and research

- Communication with patients

- Teaching and skills lectures, tutorial
- Preparing learning resource material
- Framing of research question, designing and conducting a study, analysis and interpretation of data and paper writing.

TEACHING LEARNING METHODS

The residency training programme shall include formal lectures in the subject and subspecialties, symposia, clinical discussions, training in diagnostic and therapeutic modalities, research, journal clubs / clinical clubs and teaching rounds. It shall also incorporate guest lectures, orientation classes, in-house quiz, training in computer / internet applications etc. The clinical and investigative aspects of Pediatric Neurology and its allied specialties such as Neuroanatomy, Neuropsychiatry, Neuropathology, Neurophysiology, Neurochemistry, Neuroradiology, Neuroanaesthesiology, Neurorehabilitation and Neurosurgery. The day-to-day work of the trainees is supervised by the Consultants of the department of Pediatric Neurology.

The posting is so organized that the trainee gets posted in various areas of the department like OPD, wards, laboratories etc. He/She participates in the consultation service provided by the department to the Institute.

Besides in-service activities a programme of bedside demonstrations, seminars, tutorials, group discussion, workshops, views and reviews, practice parameters, journal clubs and lectures is also organized.

4.2. TEACHING PROGRAMME

1. *Bedside Clinical Teaching/Demonstrative Teaching.*

Clinical Case discussions: Clinical discussion is the core of postgraduate programs like DM Pediatric Neurology. On an average there shall be at least one case discussion per week. The discussion should cover all the aspects from basics to the latest advances. Active involvement of the faculty shall be encouraged to maintain a high standard of training.

2. *Symposia and faculty lectures:* Symposia shall be much more frequent than formal lectures. Maximum involvement of students and faculty shall be ensured. Formal lectures by faculty – senior and junior – on various subjects will be an integral part of the schedule. However the number of such lectures shall be minimized to encourage self learning. Instead lecture topics shall be assigned as home work also.

3. A postgraduate student of a postgraduate degree course in broad specialties/super specialties would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for

publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

4. The Log books shall be checked and assessed periodically by the faculty members imparting the training.
5. The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
6. **Electrophysiology and Imaging rounds:** Discussions on EEG, other electro diagnostic modalities and newer trends in Pediatric Neurology shall be done once in a week (EEG, VEEG, BERA, VEP, NCV and EMG
7. MRI , MRS, MRA and 64 slice CT). This is of great importance in view of the fast advances occurring in the field of Pediatric Neurology. This is in addition to the separate posting to these segments
8. **Joint neurlogy conference:** An integral component of a pediatric Neurology program is team-work, especially with neuro/epilepsy surgery and physical medicine and speech therapy and behavioral therapy. The residents will be encouraged to conduct a formal joint neurology conference with the allied specialties once a week where the surgical and differently abled cases for the week will be formally discussed to formulate the management plan.
9. **Journal clubs:** Journal club is an integral part of a postgraduate training programme. This helps the students and faculty to update their knowledge in the latest developments in the field of medicine. It not only imparts new information but also trains the candidates to objectively assess and criticize the various articles and studies which will be useful in ensuring practice of evidence based medicine.
10. **Teaching rounds:** Teaching rounds shall be strengthened. A detailed teaching round at least once in a week improves the patient care in addition to enhancement of the clinical skills of the students as well as the faculty.
11. **Guest lectures:** Guest lectures shall be arranged as frequently as possible. Senior faculty from other departments, faculty from other institutions in the state and visiting national and international faculty shall be invited for guest lectures or clinical discussions and demonstrations. The topics shall cover not only medical subjects but also other aspects like communication skills, social problems etc.
12. The department should encourage e-learning activities.
13. **Clinical clubs;** monthly clinical clubs were interesting fully worked up cases will be presented

An example of teaching format is given below:

8 AM – 9AM (6 days a week)

- Seminar
- Journal club
- Case discussion.
- Interactive session on electrophysiology
- Advanced imaging session (neurosonography, CT, MRI etc)
- Joint Neurology conference with physiatrist, orthopaedician, psychiatrist, psychologist, speech therapist as per the case scenarios

Conferences and continuing medical education programmes

All postgraduate students shall be encouraged to attend and actively participate in conferences and CMEs. They should be trained to present as many papers as possible (at least one paper each in national and regional conferences-- grace marks shall be provided for the same in the internal assessment). During the three year training each candidate should attend at least two national conferences, two regional conferences and 15 hours of CME.

Training in diagnostic modalities

In addition to acquiring skills in basic modalities of neuro investigations like electroencephalogram and radiology, they should be given adequate training in various aspects of electrophysiology (including BERA, NCV, EMG VEP). They should also have adequate exposure to other areas like nuclear Neurology, CT imaging, MRI etc. Intensive care constitutes a very important area of modern pediatric neuro care and the residents will be given sufficient exposure in managing post-operative patients in the ICU.

Social Health

By concentrating on the advanced aspects of clinical medicine, the present generation doctors are moving away from the basic aspect of medical care ie. social health. Hence the young doctors should be encouraged to get involved in social activities like *epilepsy awareness programs participation in medical camps, relief works, rural care, disability rehab projects, etc.*

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by

performing independently. For this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT during the training includes:

Periodic internal assessment

To improve the standards of the postgraduate training a periodic internal objective assessment is needed.

A few such methods are

- a) assessing grading score for the log book every 6 months
- b) Theory and practical examination periodically – once a year.
- c) Regular two internal assessment both in theory and clinical should be made for every candidate. Internal assessment will be made in day-to-day work of the trainee who involves patients' care, learning bedside case presentation and research.
- d) Students will keep a log of all patients on whom they have done a complete history and physical examination, neurodiagnostic procedures and follow up evaluation. This log will include the patient's name, the date of evaluation, the patient's hospital number. This will be evaluated every month. Students are expected to do an average of three new patient evaluations per week.

Formative assessment will be conducted as follows:

Continuous: This will be based on a report by the unit in charge at the end of every semester on a scale of 1-5 (5 being the highest). The consultant would assess the progress of the candidate in cognitive abilities and psychomotor and communication skills. The candidates will be asked to maintain a log book providing the following details:

- (a) Details of presentation in the departmental journal clubs, seminars, case discussion etc., participation and presentations of papers in national conferences.
- (b) Publication of review and research articles.
- (c) Creation of learning resource material. Formulating algorithms for investigation of various neurological disorders eg encephalitis.
- (d) Details of procedures conducted with complications and outcome.

End of semester

Three end semester assessments will be undertaken. Each will consist of

- Theory
- Practical

Presentation of two cases

Objective structured clinical examination

Viva voce

Average of the three assessments will be done.

Students will be given a feedback after each assessment.

Quarterly assessment during the DM training should be based on:

1. Journal based / recent advances learning
2. Patient based /Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and Outreach Activities / CMEs

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT (FINAL ASSESSMENT)

The summative examination would be carried out as per the Rules given in **POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000**. The theory examination shall be held in advance before the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the commencement of the clinical/Practical and Oral examination.

The Post graduate Examination will be in two parts:

1. Theory Examination

The examinations shall be organised on the basis of 'Grading' or 'Marking system' to evaluate and to certify candidate's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for DM shall be held at the end of 3rd academic year.

Theory papers: There shall be 4 theory papers with the following titles:

Paper – I: Basic Sciences – (consisting of Neuro anatomy, Neuro physiology, Neurochemistry, Neuropathology, Neuro Microbiology, Parasitology, Immunology, Epidemiology and Genetics.)

Paper – II: Pediatric Neurology

Paper – III: Recent advances in Pediatric Neurology

Paper – IV: Thematic concepts relevant to clinical pediatric neurology

Practical/Clinical and Oral examination

- One long case, 2 short cases stressing the relevant allied specialities
- Structured viva voce

(a) Patient management problems

(b) General viva (including radio imaging investigations, interpretation of genetic/metabolic investigations, neurophysiological records etc)

Recommended Reading

Books

1. Pediatric Neurology Principles and practice: 4/E, Kenneth F Swaimann, S Ashwal, M Ferreiro
2. Neurology in clinical practice 5/E. W G Bradley, R B Daroff, G M Fenichel, J Jankovic
3. Neonatal Neurology J J Volpe
4. Nelson Textbook of Pediatrics, 18/E Kleigmann, Behrman, Jenson, Stanton
5. Fenichel's pediatric neurology text book of symptoms and signs
6. Fisch and Spehlmann's EEG Primer: Basic Principles of Digital and Analog EEG
7. Clinical Neurophysiology: Nerve Conduction, Electromyography and Evoked Potentials : U. K. Misra, J. Kalita
8. Niedermeyer's Electroencephalography: Basic Principles, Clinical Applications, and Related Fields: Donald L. Schomer (Editor), Fernando Lopes da Silva

Journals

3-5 International and 02 national journals (indexed)



Postgraduate Student Appraisal Form
Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM.....TO.....

Sr. No.	PARTICULARS	Not Satisfactory			Satisfactory			More Than Satisfactory			Remarks
		1	2	3	4	5	6	7	8	9	
1.	Journal based / recent advances learning										
2.	Patient based /Laboratory or Skill based learning										
3.	Self directed learning and teaching										
4.	Departmental and interdepartmental learning activity										
5.	External and Outreach Activities / CMEs										
6.	Thesis / Research work										
7.	Log Book Maintenance										

Publications

Yes/ No

Remarks*

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned.**

For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT

SIGNATURE OF HOD

