Residency Program
Doctor of Medicine (MD)
Curriculum (Phase-B)

Neurology

Bangabandhu Sheikh Mujib Medical University
Dhaka, Bangladesh
1. Introduction:

1.1. Overview of the Specialty

Neurology is a clinical specialty in the field of Medicine. Neurologists are predominantly concerned with the care of patients with neurological disorders. It is a branch of internal medicine concerned with prevention, investigation and therapy of, and research into, diseases involving the nervous system. Care of patients with neurological disorders embraces a wide range of clinical activities and neurologists need a broad view of the needs of individual patients and the communities in which they live including an understanding of any prevailing healthcare inequalities. This requires knowledge of not only the diagnostic and therapeutic modalities available, but also an appreciation of the importance of the epidemiology and potential for prevention of neurological disease. Neurologists need the ability to work as leaders of, or within, teams and systems involving other healthcare professionals in order to effectively provide optimal patient care. They generally work as hospital based specialists and need to integrate their work with not only community based primary care colleagues but also other hospital based physicians, e.g. cardiologist, diabetologists or nephrologists, as well as working closely with neurosurgeons and anesthesiologists and the imaging specialties, e.g. radiology and nuclear medicine. Sub-specialization within Neurology has become commonplace with individuals focusing the development of their expertise in areas such as electrophysiology, movement disorder, epilepsy, interventional neurology etc.

1.2. Program Overview

Residents will undertake a three year intensive phase B training after completion of phase A training in order to achieve the levels of knowledge, skills and expertise required for
clinical practice in the field of Neurological medicine. The Program encompasses a learner-centered approach to teaching and learning and, as such clearly places the responsibility of knowledge and skills acquisition upon the trainee as a mature adult learner. Through taking ownership of their own learning, trainees are able to identify, organize and manage the nature, focus and content of each and every phase of their learning pathway. It is a competency-based Program emphasizing on meaningful integration and contextualization. The two years phase A training Program is designed to introduce and develop the broad range of core knowledge, skills, Attitude and behaviors to become a competent physician. The knowledge and skills acquired during phase A training are further focused and refined during phase B training, which is a three year specialty-specific training in Neurology.

The teaching, learning and assessment of the curriculum is facilitated by the provision of comprehensive, educationally oriented supervision and support, which is provided to all trainees across both the phases of the Program.

2. Goals and Objectives:
The purpose of the curriculum is to define the process of training and the competencies needing to be acquired for the award of Specialist certification with MD in Neurology.

2.1. Goals:
1. Become familiar with evaluation and management of serious and complex neurologic disorders.
2. To prepare neurologists who would be able to meet and respond to the changing healthcare needs and expectation of the society.

3. To develop neurologists who possess knowledge, skills and attitudes that will ensure that they are competent to practice safely and effectively.
4. Learn appropriateness of diagnostic testing modalities and how to interpret data gained from diagnostic studies.
5. Learn to interact with consultant staff, patients’ families, nursing staff and aftercare coordinator.
6. Become adept at handling of consultations from the Emergency Department and other inpatient hospital services.

2.2. Learning Objectives:
The educational and training process aims to produce medical specialists who:

- Apply appropriate knowledge and skill in the diagnosis and management of patients.
- Establish a differential diagnosis for patients presenting with medical problems by the appropriate use of the clinical history, examination and investigations
- Are competent to perform the core investigations and procedures required in their neurology
- Develop clinical practice which is based on an analysis of relevant clinical trials and to have an understanding of their research methodologies
- Are able to apply the knowledge of biological and behavioral sciences in clinical practice
- Are able to identify and take responsibility for their own educational needs and the attainment of these needs.
- Have developed the skills of an effective teacher
- Are able to act as safe independent practitioners whilst recognizing the limitation of their own expertise and are
able to recognize their obligation to seek assistance of colleagues where appropriate.
- Can develop management plans for the “Whole patient” and maintain knowledge in other areas of medicine which impinge on the specialty of Cardiology.
- Understand that more effective communication between them and their patients can lead to more effective treatment and care
- Will be honest and objective when assessing the performance of those they have supervised and trained
- Have acquired and developed leadership and team working skills, especially with other healthcare professional, to deliver patient centered care.
- Are aware of current thinking about ethical and legal issues.

3. Admission Requirements for Phase B Training:
A. Residents who has passed phase-A final examination in Medicine and Allied are eligible for enrolment in the phase-B Program.
B. Candidates with FCPS/MD in Internal Medicine can be enrolled directly into phase-B of the residency Program.

4. Content (Syllabus) Outline: Detail in section 11
The training is designed to develop both the generic and specialty-specific attributes necessary to practice independently as a consult neurologist. The aim is to train individuals to provide the highest standard of service to patients with neurological disorders. This includes the development of positive attitudes towards lifelong learning and the ability to adopt future technological advances and the changing expectations of the society.

### 4.1. Educational Program:
#### 4.1.1. Applied Basic Medical Science
Applied Medical Science related to Neurology with meaningful integration

#### 4.1.2. Neurology Syllabus
The syllabus includes the cardinal manifestations, definition, epidemiology, etiopathogenesis, genetics, clinical presentation, complications, differential diagnosis, investigations, treatment and prevention and prognosis of all Neurological diseases. In addition the trainee should be well versed with all the common and important paediatric Neurological diseases. It will also cover the recent advances that have occurred in the field of Neurology.

#### 4.1.3. Basic Courses on: (to be satisfactory completed)
- Research Methodology
- Medical Education

#### 4.2. Phase B Training Rotations:
Neurology specialty training comprises rotations in.

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<tr>
<th>Rotation</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Neurology inpatients, outpatients and Emergency department</td>
<td>2 years</td>
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<td>Neuro-electrophysiology</td>
<td>3 months</td>
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<td>Neuro-ICU</td>
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<td>Pediatrics Neurology and Neuroradiology</td>
<td>2 months</td>
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<td>Neuro-psychiatry</td>
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<td>Neurosurgery</td>
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<td>Physical Medicine</td>
<td>1 month</td>
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<tr>
<td>Preparation for examinations</td>
<td>3 month</td>
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5. Teaching and Learning Methods:
It is important that the trainees work in 'a good learning environment' to maximize their learning opportunities. This includes encouragement for self-directed learning as well as recognizing the learning potential in all aspects of day-to-day work. There should be a positive attitude to training with learning from peers being encouraged. There should be active involvement in group discussion as this is an important way for doctors to share their understanding and experiences. A supportive open atmosphere should be cultivated and questions welcomed.

The bulk of learning occurs as a result of clinical experiences (experimental learning, on-the-job learning) and self-directed study. The degree of self-directed learning will increase as trainees become more experienced. Lectures and formal education sessions make up only a small part of the Program. Learning opportunities to be utilized will include: Experiential learning opportunities, Training in practical procedures, Small group learning opportunities, one-to-one teaching, Formal training, Personal study and Teaching others.

6. Record of training:
The evidence require to confirm progress through training includes:
- Details of the training rotations, the training plan agreed with weekly timetables and duty rosters; and numbers of practical procedures and outcomes.
- Confirmations of attendance at events in the educational Program, at departmental and interdepartmental meetings and other educational events.
- Confirmation * (certificates) of attendance at subject-based/skills-training/instructional courses. Recorded attendance at conference and meetings.
- A properly completed logbook with entries capable of testifying to the training objectives which have been attained and the standard of performance achieved.

6.1. Logbook: Residents are required to maintain a logbook in which entries of academic/professional work done during the period of training should be made on a daily basis and signed by the supervisor. Completed and duly certified logbook will form a part of the application for appearing in phase B final examinations.

7. Research:
Development of research competency forms an integral part of the Residency Program curriculum as they are an essential set of skills for effective clinical practice. Undertaking research helps to develop critical thinking and the ability to review medical literature. Clinical research also allows development of particular expertise in one area of Neurological Medicine allowing more in-depth knowledge and skills and helping to focus long-term career aims and interests. Every resident shall carry out work on an assigned research project under the guidance of a recognized supervisor. The project shall be written and submitted in the form of a Thesis/Research report.

8. Assessment:
The assessment for certification of the MD degree of the University is comprehensive, integrated and phase-centered attempting to identify attributes expected of specialists for independent practice and lifelong learning and covers...
cognitive, psychomotor and affective domains. It keeps strict reference to the components, the contents, the competencies and the criteria laid down in the curriculum. Assessment includes both Formative Assessment and Summative (Phase final) Examinations.

8.1. Formative Assessment:
Formative assessment will be conducted throughout the training phases. It will be carried out for tracking the progress of residents, providing feedback, and preparing them for final assessment (Phase completion exams). There will be Continuous (day-to-day) and Periodic type of formative assessment.

- Continuous (day-to-day) formative assessment in classroom and workplace settings provides guide to a resident’s learning and a faculty’s teaching / learning strategies to ensure formative lesson / training outcomes.
- Periodic formative assessment is quasi-formal and is directed to assessing the outcome of a block placement or academic module completion. It is held at the end of Block Placement and Academic Module Completion. The contents of such examinations include Block Units of the Training Curriculum and Academic Module Units of the Academic Curriculum.

8.1.1. End of Block Assessment (EBA):
End of Block Assessment (EBA) is a periodic formative assessment and is undertaken after completion of each training block, assessing knowledge, skills and attitude of the residents. Components of EBA are written examination, structured clinical Assessment (SCA), medical record review, and logbook assessment. Unsatisfactory block training must be satisfactorily completed to be eligible for phase final examination.

8.1.2. Formative assessment for Academic modules for Biostatistics and Research Methodology and Medical Education to be done in the first nine months of Phase B training. Residents getting unsatisfactory grade must achieve satisfactory grade by appearing the re-evaluation examination to be eligible for the Phase B Final Examination.

8.2. Summative Examination:
Assessment will be done in two broad compartments.

a) Compartment A: Consist of 3 (three) components.
   1. Written Examination (Consisting of 2 papers).
   2. Clinical Examination (One long and four short cases).
   3. SCA and Oral (10 stations SCA, Oral one board consisting of 2 examiners).

Every Resident must pass all the 3 components of compartment-A separately. Candidates will be declared failed if he/she fails in one or more component(s) of the examination. He/she then have to appear all the 3 components in the next Phase B Final Examination.


8.2.1. Written Examination:
Two Papers: Contents of written papers listed in Annexure II Question type and marks:

- Two Papers (Paper I and Paper II); 100 marks each; Time 3 hrs for each paper. Pass marks-60% of total of 2 papers.
- Each paper will consist of Two Groups:
  - Group A:
    - 10 short questions (5 marks each)
    - These will assess the knowledge of different level and its application
  - Group B:
    - 5 scenario based problem solving questions (10 marks for each).
    - The questions should focus to assess the capability of handling clinical problem independently and comprehensively as a specialist.
    - Suggested format:
      - A scenario followed by question(s).
      - Questions may include diagnosis, differential diagnosis, investigation plan, treatment, follow up and patient education.

8.2.2. Clinical Examination: Long case and Short case:
- There will be one long case and four short cases.

i) Long case: Marks-100
- Directly observed
- Two examiners for each examinee.
- History taking and examination by the examinee – 30min.
- Discussion on the case 20 min.(presentation 6min, crossing 6x2min and decision 2min).
- Examiners will not ask any question nor stop the examinee in any way during history taking and physical examinations.
- Discussion should be done preferably as per structured format and proper weightage on different segments of clinical skills.

ii) Short cases: Marks-100
- Four in number
- Time 20-30 min. (Time will be equally divided for each short case)
- Crossing should be done with proper weightage on different segment of clinical skills.

iii) Pass marks: 60% of total of Long and Short Cases

8.2.3. Structured Clinical Assessment (SCA): Marks-100
- 10 stations : 5 min each

8.2.4. Oral Examination: Marks-100
- One board consisting of 2 examiners.
- 20 minutes (9+9+2).

8.2.5. Pass marks in SCA and Oral: 60% of total (SCA and Oral.)

8.3. Thesis Evaluation:
- Marks: Thesis writing-200; Defense-100: Marks for acceptane-60% of total.
- To be evaluated by 3 (three) evaluators:- 2 subject specialists and one academician preferably involve in research and teaching research methodology.
- Among the subject specialists one should be external.
- Evaluators should be in the rank of Professor/Associate Professor.
- Supervisor will attend the defense as an observer and may interact only when requested by the evaluators.
- Thesis must be submitted to the controller of Exam not later than 27 months of enrolment in Phase-B.
- Thesis must be sent to the evaluators 2 (Two) weeks prior to assessment date.
Evaluation will cover Thesis writing and its defense.
- For thesis writing evaluator will mark on its structure, content, flow, scientific value, cohesion, etc.
- For defense – Candidate is expected to defend, justify and relate the work and its findings.
- Assessment must be completed in next 3 months.
- Outcome of the assessment shall be in 4 categories – "Accepted", "Accepted with minor correction", "Accepted with major correction" and "Not Accepted".

8.3.1. Description of terms:
- **Accepted**: Assessors will sign the document and resident will bound it and submit to the Controller of Examinations by 10 days of the examination.
- **Accepted with minor correction**: Minor correction shall include small inclusion/exclusion of section; identified missing references, correction of references and typographical and language problem. This should be corrected and submitted within 2 weeks.
- **Accepted with major correction**: Task is completed as per protocol with acceptable method but some re-analysis of result and corresponding discussion are to be modified.
- **Not Accepted**: When work is not done as per protocol or method was faulty or require further inclusion of confirmation of study.
- To be corrected, confirmed by Supervisor and submit within 3 (Three) weeks.
- To complete the suggested deficiencies and reappear in defense examination during its next Phase Final Examination.
- Candidate has to submit his/her thesis and sit for examination and pay usual examination fees for the examination.

8.3.2. Residents must submit and appear Thesis defense at notified date and time. However non-acceptance of the Thesis, does not bar the resident in appearing the written, clinical and oral exam.

8.4. Qualifying for MD/MS Degree:
On passing both the compartments, the candidate will be conferred the degree of MD/MS in the respective discipline. If any candidate fails in one compartment he/she will appear in that compartment only in the subsequent Phase-B exam.

9. Supervision and Training Monitoring:
Training should incorporate the principle of gradually increasing responsibility, and provide each trainee with a sufficient scope, volume and variety of experience in a range of setting that include inpatients, outpatients, emergency and intensive care. All elements of work in training rotation must be supervised with the level of supervision varying depending on the experience of the trainee and the clinical exposure and case mix undertaken. Outpatient and referral supervision must routinely include the opportunity to personally discuss all cases. As training progresses the trainee should have the opportunity for increasing autonomy, consistent with safe and effective care for the patient. Trainees will at all times have a named Supervisor, responsible for overseeing their education and training.

**Supervisors** are responsible for supervision of learning throughout the Program to ensure patient and / or laboratory safety, service delivery as well as the progress of the resident with learning and performance. They set the lesson plans based on the curriculum, undertake appraisal, review progress against the curriculum, give feedback on both formative and...
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summative assessments as well as sign the logbook and portfolio. The residents are made aware of their limitations and are encouraged to seek advice and receive help at all times.

The Course Coordinator of each department coordinates all training and academic activities of the program in collaboration with the Course Manager. The Course Director of each faculty directs guides and manages curricular activities under his/her jurisdiction and is the person to be reported to for all events and performances of the residents and the supervisors.

10. Curriculum Implementation, Review and Updating:
Both trainers and trainees are expected to have a good knowledge of the curriculum and should use it as a guide for their training Program.

Since Neurology has historically been changing specialty the need for review and up-dating of curricula is evident. The curriculum is specifically designed to guide an educational process and will continue to be the subject of active redrafting, to reflect changes in both educational theory and practice. Residents and Supervisors are encouraged to discuss the curriculum and to feedback on content and issue regarding implementation at Residency Course Director. Review will be time tabled to occur annually for any minor changes to the curriculum. The curriculum will be reviewed with input from the various subspecialties of Neurology.

11. Detail Content of Learning (The Syllabus):
The syllabus for the curriculum integrates basic medical sciences and clinical knowledge. The aim of the syllabus is to set out for trainees a comprehensive description of the breadth and depth of knowledge, skills and attitudes expected of them. The syllabus will be revised and upgraded periodically. The

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eamination will not test areas that are not explicitly or implicitly included in the syllabus, but it should be noted that research and change in the environment might sometimes lead to changes in scientific theory and clinical practice before the syllabus is updated to reflect them. Trainees will be expected to keep abreast of such developments by reading appropriate literatures.

A. Applied Basic Medical Science:

I. Basic Principles in Neurology
1. Neuro Anatomy
2. Neuro Physiology
3. Neuro Pathology
4. Neuro Pharmacology
5. Genetics and Molecular Basis of Neurology
6. Clinical skills to diagnose and manage Neurological diseases.

II. Basic and Advanced knowledge about Neuro Critical Care

B. Diseases and Presentations: (Core Clinical Syllabus)
Block 1:
A) Method of Clinical Examination
B) Analysis of Cardinal manifestation:
1. Motor Paralysis
2. Abnormalities of Movement and Posture due to Disease of the Basal Ganglia
3. In coordination and Other Disorders of Cerebral Function
4. Tremor, Myoclonus, Focal Dystonia, and Tics
5. Disorders of Stance and Gait
6. Pain and Other Somatic Sensation
7. Headache and Other Craniofacial Pains

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9. Disorders of Sleep
10. Disorders of Higher Function & Behavior
11. Epilepsy and Other Seizure Disorders
12. Coma and Related Disorders of Consciousness
13. Faintness and Syncope
14. Delirium and Other Acute Confusional States
15. Dementia and the Amnestic Syndrome
16. Disorders of Speech and Language
17. Disorders of Smell and Taste
18. Disorders of the Visual System
19. Disorders of Ocular Movement and Pupillary Function
20. Disorders of Deafness, Dizziness, and Disorders of Equilibrium
21. Disorders of Cranial Nerves
22. Fatigue, Asthenia, Anxiety, and Depressive Reactions
23. Limbic Lobes and the Neurology of Emotion
24. Disorders of Autonomic Nervous System, Respiration, and Swallowing
25. The Hypothalamus and Neuroendocrine Disorders

Block 2:
1. Ischemic Cerebrovascular Diseases
2. Transient ischemic attacks
3. Endovascular treatment of stroke
4. Intracranial hemorrhage
5. Subarachnoid hemorrhage
6. Arteriovenous malformations of brain
7. Thrombosis of cerebral veins and venous sinuses
8. Stroke due to hypercoagulable states
9. Evaluation of stroke of young patients
10. Hypertensive encephalopathy and diffuse vasospasm

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11. Inflammatory diseases of brain arteries
12. Infections of Nervous System (Bacterial, Fungal, Spirochetal, Parasitic) and post infectious disorder.
13. Acute, sub acute and chronic meningitis
14. Encephalitis
15. Subdural empyema
16. Brain and Epidural abscess
17. Multiple Sclerosis
18. Acute disseminated encephalomyelitis and other Demyelinating Disease
19. CNS Vasculitis syndrome

Block 3:
1. Motor Neuron Disease and Other Syndrome of slowly developing Muscular Weakness and Atrophy
2. Principles of Clinical Myology: Diagnosis and Classification of Diseases of Muscle and Neuromuscular junction
3. The Inflammatory Myopathies
4. The Muscular Dystrophies
5. The Metabolic and Toxic Myopathies
6. The Congenital Neuromuscular Disorders
7. Myasthenia Gravis and Related Disorders of the Neuromuscular Junction
8. The Periodic Paralysis and Hereditary, Nondystrophic Myotonias
9. Disorders of Peripheral Nerve
10. Disorders of Autonomic Nervous System
11. Disorders of Muscle Characterized by Cramps, Spasm, Pain, and Localized Masses
12. Acquired metabolic disorders of nervous system
13. Inherited metabolic disorders of nervous system

Block 4:
1. CSF Disorders including Hydrocephalus, Pseudo tumor Cerebri, and Low-Pressure Syndrome

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2. Parkinsonism & Movement Disorders
3. Alzheimer Disease and Other Syndrome of Progressive Dementia
4. Spinocerebellar Ataxia and Other Syndrome of Progressive Ataxia
5. Hereditary Sensorimotor Disorders
6. Diseases of the Nervous System due to Nutritional Deficiency
7. Disorders of the Nervous System due to Drugs, Toxins, and Other Chemical Agents
8. Alcohol and Alcoholism

Brain:
- Stroke
- Sub-arachnoid haemorrhage
- Space occupying lesion
- Demyelinating disease
- Degenerative disease
- Infectious disease
- Abscess
- Vascular malformation
- Traumatic injury etc.

Spinal cord:
- Space occupying lesion
- Demyelinating disease
- Vascular malformation
- Infectious disease
- Syringomyelia
- Trauma
- Degenerative disease
- Disc lesion
- Compressive myelopathy & radiculopathy
- Developmental disorder of spine and spinal cord etc.

Block 5:

In Neuroradiology:
- Basic principle of CT
- Basic principle of MRI
- Basic principle of CTA
- Basic principle of MRA
- Interpretations of disease by CT
- Interpretations of disease by MRI
- Interpretations of disease by CTA
- Interpretations of disease by MRA

Diseases that must be interpreted by CT & MRI includes:

Neuro-ICU:
- Indication of ICU
- Indication of mechanical ventilation
- Different mode of Mechanical ventilation
- Treatment of raised intracranial pressure
- Indication and complication of tracheostomy

Pediatric Neurology:
- Normal development and Deviation in Development of the NS
- Developmental Diseases of the Nervous System
- Cerebral palsy
- Epilepsies of infancy and childhood
- Prenatal and paranatal infections
- Microcephaly
- Chiari Malformation
- Chromosomal abnormalities including Down syndrome
- Congenital neuroectodermoses
- Mental retardation including Autistic spectrum disorder
### Residency Program: Neurology

#### Psychiatry:
- Psychiatric manifestation of neurologic disease
- Neurologic manifestation of psychiatric disease
- Drugs used in Psychiatry
- Idea about ECT
- Important diseases:
  - Schizophrenia and paranoid states
  - Bipolar mood disorder and depression
  - Dementia
    - Anxiety and neuroses
    - Personality disorder
  - Somatoform disorder

#### Neuro-Surgery:
- Management of head injury and spine injury
- Management of Space occupying lesion
- Management of raised ICP
- Compressive myelopathy and radiculopathy
- Macrocephaly
- Surgical aspect of stroke
- Epilepsy surgery
- Surgery in movement disorder

#### Operation that must be seen for:
- Burr hole
- Craniotomy
- Craniectomy
- Clipping for Aneurysm
- VP shunt
- EVD
- Surgery for myelopathy, radiculopathy, and PLID

### Physical Medicine:
- Principles of physiotherapy in neurology
- Rehabilitation in stroke
- Rehabilitation in paraplegia and quadriplegia
- Peripheral neuropathy
- Muscle diseases
- PLID
- Spondylosis

#### Block 6:
1. Electrophysiology including NCS, EMG, EEG.

#### A. Practical Performance, Procedures and Investigations:
- LP
- EEG procedure
- EEG reporting
- NCS & EMG procedure
- NCS & EMG Reporting
- Tensilon test/ Neostigmine test
- Ice on Eye test
- DSA and other vascular interventional procedure
- Non-vascular intervention—Inj. Botulinum Toxin

#### B. Academic Activities:
- Journal Club Presentation
- Case presented in Grand Round / Clinical meeting
- Paper presented in Seminars, Symposium, Conferences, Workshop, etc
- Attendance in Seminars, Symposium, Conferences, Workshop, CME, etc
- Interpretations of Lab data and investigation
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- Lectures of Neurology attended
- Lectures of Biostatistics/ Neuro-anatomy/ Embryology/
  Neuro-genetics/ Neuro-pathology

C. Attachment in allied topic:
- Neuro ICU
- Neuropaediatrics
- Neuropsychiatry
- Neurosurgery
- Physical Medicine
- Neuro-radiology

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Annexure 1:
Clinical Training Rotations:

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<tr>
<th>Block 1</th>
<th>Months</th>
<th>1st</th>
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<th>3rd</th>
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<tbody>
<tr>
<td>Educational Program</td>
<td>Global burden of CVD, Applied and</td>
<td>Physiology, Principles of molecular Neurology,</td>
<td>Genetic basis of CVD: Basic Courses:</td>
<td>Biostatistics, Research Methodology, Basics of</td>
<td>Medical Education</td>
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<td>A) Method of Clinical Examination</td>
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| 17. Disorders of Smell and Taste | 12. Infections of Nervous System (Bacterial, Fungal, Spirochetal, Parasitic) and post infectious disorder. |
| 22. Fatigue, Asthenia, Anxiety, and Depressive Reactions | 17. Multiple Sclerosis |
| 23. Limbic Lobes and the Neurology of Emotion | 18. Acute disseminated encephalomyelitis and other Demyelinating Disease |
| 25. The Hypothalamus and Neuroendocrine Disorders | **Clinical Training Rotations** |

| Thesis work | Protocol development/ Submission/ RB Clearance |
| Clinical Training Rotations | **Block 2** |

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<th>Months</th>
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<tr>
<td>1.</td>
<td>Ischemic Cerebrovascular Diseases</td>
<td>1. Motor Neuron Disease and Other Syndrome of slowly developing Muscular Weakness and Atrophy</td>
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<td>Transient ischemic attacks</td>
<td>2. Principles of Clinical Myology: Diagnosis and Classification of Diseases of Muscle and Neuromuscular junction</td>
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<td>3.</td>
<td>Endovascular treatment of stroke</td>
<td>3. The Inflammatory Myopathies</td>
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<td>4.</td>
<td>Intracranial hemorrhage</td>
<td>4. The Muscular Dystrophies</td>
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<td>5.</td>
<td>Subarachnoid hemorrhage</td>
<td>5. The Metabolic and Toxid Myopathies</td>
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<td>7.</td>
<td>Thrombosis of cerebral veins and venous sinuses</td>
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<td>8.</td>
<td>Stroke due to hypercoagulable states</td>
<td>8. The Periodic Paralysis and Hereditary, Nondystrophic Myotonias</td>
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<td>9.</td>
<td>Evaluation of stroke of young patients</td>
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<td>10.</td>
<td>Hypertensive encephalopathy and diffuse vasospasm</td>
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<td>11.</td>
<td>Inflammatory diseases of brain arteries</td>
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### Residency Program: Neurology

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<tr>
<th>Block 4</th>
<th>Months</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
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<tbody>
<tr>
<td>Educational Program</td>
<td>1.</td>
<td>CSF Disorders including Hydrocephalus, Pseudo tumor Cerebri, and Low-Pressure Syndrome</td>
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<td></td>
<td>2.</td>
<td>Parkinsonism &amp; Movement Disorders</td>
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<td></td>
<td>3.</td>
<td>Alzheimer Disease and Other Syndrome of Progressive Dementia</td>
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<td>4.</td>
<td>Spinocerebellar Ataxia and Other Syndrome of Progressive Ataxia</td>
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<td>5.</td>
<td>Hereditary Sensorimotor Disorders</td>
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<td>6.</td>
<td>Diseases of the Nervous System due to Nutritional Deficiency E O B A</td>
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<td>7.</td>
<td>Disorders of the Nervous System due to Drugs, Toxins, and Other Chemical Agents</td>
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<td></td>
<td>8.</td>
<td>Alcohol and Alcoholism</td>
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</tbody>
</table>

### Spinal Cord:
- Space occupying lesion
- Demyelinating disease
- Degenerative disease
- Infectious disease
- Abscess
- Arachnoid cyst
- Vascular malformation
- Traumatic injury etc.

### Inpatient, Outpatient
- Protocol Development/Submission/RB Clearance
### Residency Program - Neurology

#### Block 5

<table>
<thead>
<tr>
<th>Months</th>
<th>1&lt;sup&gt;st&lt;/sup&gt;</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt;</th>
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<th>4&lt;sup&gt;th&lt;/sup&gt;</th>
<th>Physical Medicine</th>
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<tbody>
<tr>
<td>Basic principle of CT</td>
<td>Indication of mechanical ventilation</td>
<td>赁</td>
<td>of the Nervous System</td>
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<td>of the Nervous System</td>
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<tr>
<td>Basic principal of MRI</td>
<td>Different mode of Mechanical ventilation</td>
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<td>Cerebral palsy</td>
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<td>of the Nervous System</td>
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<tr>
<td>Basic principle of CTA</td>
<td>Treatment of raised intracranial pressure</td>
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<td>Epilepsy of infancy and childhood</td>
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<td>of the Nervous System</td>
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<tr>
<td>Basic principle of MRA</td>
<td>Indication and complication of tracheostomy</td>
<td></td>
<td>Prenatal and parasutal infections</td>
<td></td>
<td>of the Nervous System</td>
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<tr>
<td>Interpretations of disease by CT</td>
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<tr>
<td>Interpretations of disease by MRI</td>
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<tr>
<td>Interpretations of disease by CTA</td>
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<tr>
<td>Interpretations of disease by MRA</td>
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<tr>
<td>Diseases that must be interpreted by CT &amp; MRI includes:</td>
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</table>

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### Residency Program - Neurology

#### Block 6

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<tr>
<th>Months</th>
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<th>2&lt;sup&gt;nd&lt;/sup&gt;</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt;</th>
<th>4&lt;sup&gt;th&lt;/sup&gt;</th>
<th>5&lt;sup&gt;th&lt;/sup&gt;</th>
<th>6&lt;sup&gt;th&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Program</td>
<td>1) Electrophysiology including NCS, EMG, EEG.</td>
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<tr>
<td>Clinical Training</td>
<td>Neuro-electrophysiology (NCV, EMG, EEG)</td>
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<td>Rotations</td>
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<tr>
<td>Thesis work</td>
<td>Report writing and Submission of Thesis</td>
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</tr>
</tbody>
</table>

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### Other Educational Program

**A. Practical Performance, Procedures and Investigations:**
- LP
- EEG procedure
- EEG reporting
- NCS & EMG procedure
- NCS & EMG Reporting
- Tension test/ Neostigmine test
- Ice on Eye test
- DSA and other vascular interventional procedure
- Non-vascular intervention—Inj. Botulinum Toxin

**B. Academic Activities:**
- Journal Club Presentation
- Case presented in Grand Round / Clinical meeting
- Paper presented in Seminars, Symposium, Conferences, Workshop, etc
- Attendance in Seminars, Symposium, Conferences, Workshop, CME, etc
- Interpretations of Lab data and investigation
Residency Program Neurology

- Lectures of Neurology attended
- Lectures of Biostatistics/ Neuro-anatomy/ Embryology/ Neuro-genetics/ Neuro-pathology

> Biostatics & medical education should completed within the first 09th Month of educational years in respective department.

Residency Program Neurology

Annexure 2:
Content of written papers

<table>
<thead>
<tr>
<th>Paper - 01</th>
<th>Paper - 02</th>
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</thead>
<tbody>
<tr>
<td>01. Motor Paralysis</td>
<td>01. Motor Neuron Disease and Other Syndrome of slowly developing Muscular Weakness and Atrophy</td>
</tr>
<tr>
<td>02. Abnormalities of Movement and Posture due to Disease of the Basal Ganglia</td>
<td>02. Principles of Clinical Myology; Diagnosis and Classification of Diseases of Muscle and Neuromuscular junction</td>
</tr>
<tr>
<td>03. In coordination and Other Disorders of Cerebral Function</td>
<td>03. The Inflammatory Myopathies</td>
</tr>
<tr>
<td>04. Tremor, Myoclonus, Focal Dystonia, and Tics</td>
<td>04. The Muscular Dystrophies</td>
</tr>
<tr>
<td>05. Disorders of Stance and Gait</td>
<td>05. The Metabolic and Toxic Myopathies</td>
</tr>
<tr>
<td>06. Pain and Other Somatic Sensation</td>
<td>06. The Congenital Neuromuscular Disorders</td>
</tr>
<tr>
<td>07. Headache and Other Craniofacial Pains</td>
<td>07. Myasthenia Gravis and Related Disorders of the Neuromuscular Junction</td>
</tr>
<tr>
<td>08. Pain in the Back, Neck, and Extremities</td>
<td>08. The Periodic Paralysis and Hereditary, Nondystrophic Myotonias</td>
</tr>
<tr>
<td>09. Disorders of Sleep</td>
<td>09. Disorders of Peripheral Nerve</td>
</tr>
<tr>
<td>11. Epilepsy and Other Seizure Disorders</td>
<td>11. Disorders of Muscle Characterized by Cramps, Spasm, Pain, and Localized Masses</td>
</tr>
<tr>
<td>13. Faintness and Syncope</td>
<td>13. Inherited metabolic disorders of nervous system</td>
</tr>
<tr>
<td>14. Delirium and Other Acute Confusional States</td>
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<tr>
<td>15. Dementia and the Amnesic Syndrome</td>
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<tr>
<td>16. Disorders of Speech and Language</td>
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<tr>
<td>17. Disorders of Smell and Taste</td>
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<td>18. Disorders of the Visual System</td>
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</tbody>
</table>
Residency Program

19. Disorders of Ocular Movement and Pupillary Function
20. Disorders of Deafness, Dizziness, and Disorders of Equilibrium
21. Disorders of Cranial Nerves
22. Fatigue, Asthenia, Anxiety, and Depressive Reactions
23. Limbic Lobes and the Neurology of Emotion
24. Disorders of Autonomic Nervous System, Respiration, and Swallowing
25. The Hypothalamus and Neuroendocrine Disorders
27. Educational Program
   Ischemic Cerebrovascular Diseases
28. Transient ischemic attacks
29. Endovascular treatment of stroke
30. Intracranial hemorrhage
31. Subarachnoid hemorrhage
32. Arteriovenous malformations of brain
33. Thrombosis of cerebral veins and venous sinuses
34. Stroke due to hypercoagulable states
35. Evaluation of stroke of young patients
36. Hypertensive encephalopathy and diffuse vasospasm

Brain:
- Stroke
- Sub-arachnoid haemorrhage
- Space occupying lesion
- Demyelinating disease
- Degenerative disease
- Infectious disease
- Abscess
- Vascular malformation
- Traumatic injury etc.

Spinal cord:
- Space occupying lesion

Neurology

37. Inflammatory diseases of brain arteries
38. Infections of Nervous System (Bacterial, Fungal, Spirochetal, Parasitic) and post infectious disorder.
39. Acute, sub acute and chronic meningitis
40. Encephalitis
41. Subdural empyema
42. Brain and Epidural abscess
43. Multiple Sclerosis
44. Acute disseminated encephalomyelitis and other Demyelinating Disease
45. CNS Vasculitis syndrome
46. Basic anatomy, Physiology, Pharmacology.
47. Contents of Presentation in Journal Club

** Applied anatomy and Physiology
** Topics of latest advanced in Neurology

Demyelinating disease
Vascular malformation
Infectious disease
Syringomyelia
Trauma
Degenerative disease
Disc lesion
Compressive myelopathy & radiculopathy
Developmental disorder of spine and spinal cord etc.

February, 2014