Adult Neurology Residency Training Program

Program Director

Dr.Jasem Al-Hashel

Table of contents:

Welcome from the Program Director

Dear Neurology Residents,

On behalf of the Faculty of Neurology and the Neurology Residency Training Committee, I would like to take this opportunity to welcome you to **The Adult Neurology Training Program.** We wish you the best of success in your future studies.

In this package, please find enclosed our training program specific objectives of training and training requirements.

You will note that our program specific objectives and requirements are provided in the CanMEDS format. A brief description of the CanMEDS roles, as they relate to our training program, is provided. Furthermore, program specific objectives and requirements for each of the core rotations as well as elective rotations within our program will be provided at a later time. Training goals specific to the individual phases of our training program are provided.

These program specific objectives and requirements will form the basis on which you will be evaluated during your training. Please familiarize yourself with these objectives and training requirements.

Dr.Jasem Al-Hashel

Adult Neurology Program Director

KIMS

Neurology Residency Program

General Objectives of Training and Training Requirements In Neurology

Adult Neurology Residency Training Program

Preamble

Neurology is the subspecialty of internal medicine dealing with the investigation, diagnosis and therapy of diseases specific to the peripheral and central nervous system as well as complications of systemic disorders affecting nervous function. Significant overlap occurs with psychiatric disorders. Thus trainees in neurology should acquire a firm grounding in internal medicine and some understanding of psychiatric disorders.

The aim of the program is to produce a physician-specialist with the competence to effectively diagnose and manage the care of patients with neurological diseases.

The objectives of our residency training program outlined below are provided in the CanMEDS format. The CanMEDS roles for physicians (and trainees) define wide range knowledge, attitudes and skills required in order to be an effective, competent, knowledgeable and professional physician. The CanMEDS roles also provide the framework by which you will be evaluated during your residency training.

The following paragraphs outline the components of the CanMEDS roles, methods by which the objectives of such roles can be met and methods that will be used for evaluation. Detailed objectives are provided thereafter and you are asked to familiarize yourself with them as well.

CanMEDS roles for neurology trainees:

1. Medical Expert/Clinical Decision Maker

A) Knowledge

This area comprises the factual knowledge base that the consultant must have in order to properly evaluate and manage patients with neurological disease. In addition to knowledge relevant to medical disorders acquired during the PGY1 training, specific areas of knowledge needed include embryology, neuroanatomy, neurophysiology, histopathology, clinical and molecular genetics, pharmacology of neurology-specific drugs and drugs that have neurological effects as well as knowledge of the plethora of clinical disorders affecting the nervous system.

Such knowledge can be acquired in several ways including ward teaching rounds, seminars, didactic teaching rounds, conferences, academic half-day as well as individual study. Residents are advised to purchase appropriate neurologic texts in consultation with staff and more senior residents.

Knowledge base will be assessed in three main ways:

1) Case review with attending staff gives the staff insight into the depth of knowledge acquired by the resident related to clinical cases as well as scientific knowledge when specifically tested.

2) Service rounds, at which oral discussions of cases occurs, provides a larger staff audience with evidence of knowledge base.

B) Clinical Skills

Clinical skills comprise the acts of obtaining a history, performing a comprehensive general and neurological examination, formulating a differential diagnosis, devising an investigation plan and planning therapy. These skills are best taught on the clinical services and in the outpatient clinic setting by the attending staff and more senior trainees. Likewise these skills are best assessed in

these same settings as well as at service rounds and during the annual practise oral exam. A less formal clinical skills assessment, in which the resident is observed interviewing and examining a patient and is then given feedback, occurs periodically.

C) Technical Skills

Technical skills in neurology consist of LPs, EMG and EEG techniques and interpretation. EMG and EEG training are part of a mandatory rotation with both clinical and laboratory emphasis. Such specialized skills are best assessed in the laboratory setting. LPs are taught by senior trainees. At present no formal evaluation of this skill is in place.

2. Communicator

Communication skills refer to the ability to communicate effectively with patients regarding their diagnosis, investigations needed, treatment plan, prevention and prognosis. Such discussions also include family members. Communication skills are also needed to effectively interact with other members of the health care team and to provide colleagues with the results of clinical assessments including recommendations. Communication skills are often already well established by the start of residency training. However, modifications of such skills can be brought about by observation of others and if serious problems exist, referral to individuals with expertise in correcting communications problems.

3. Collaborator

Teaching skills are essential to a competent consultant who must be able to teach peers, residents and students of neurology and other disciplines and lay individuals. Teaching can be very broadly defined spanning formal lectures to informal one-on-one sessions. Such skills are assessed infrequently in our program and generally receive comment only when they are noted as extra strengths of the trainee.

Supervisory skills include supervision of students and more junior residents on the service, management of the ward service and interaction with other members of the health care team (nurses, therapists, pharmacists, social workers, dieticians etc.) both in the hospital and in the community.

4. Manager

This role includes a variety of skills including record keeping. Proper record keeping requires recording of history and physical exam information, diagnostic and therapeutic formulation, progress notes, discharge notes, discharge summaries and clinic letters. Feedback by senior trainees and staff provides the best method of instruction. Evaluation is done by attending staff review of charts and letters as well as service rounds after discharge of the patient.

5. Health Advocate

This role encompasses a variety of skills including the ability to identify the important determinants of health affecting patients. As well, one should be able to contribute effectively to improved health of patients and communities and recognize and respond to those issues where advocacy is appropriate.

6. Scholar

The role encompasses a variety of academic skills. Academic skills include understanding the principles of clinical and basic research, the ability to properly read and evaluate literature, an understanding of and interest in the scientific basis for clinical practice. Journal clubs help develop critical appraisal skills. Such skills are informally evaluated during clinical rotations and at conferences.

7. Professional

Attitudes are difficult to teach and hard to evaluate given the subjective nature of some of these topics. Included in this category are items such as sense of responsibility to patients and colleagues, respect for the patient and self-assessment capabilities. Neurologists are frequently faced with the ethical issues related to life-support mechanisms, brain death, persistent vegetative state and refusal of treatment. The neurology resident acquires principles related to

biomedical ethics from exposure to staff physicians as role models, ethics consultations by a biomedical ethics specialist, weekly multi-disciplinary service rounds (including social workers) and Neurology grand rounds. These attitudes are evaluated by staff during rounds and in clinic.

Evaluation

The above CanMEDS roles and the objectives outlined briefly above and in more detail below form the basis of evaluation during the training program. Evaluation of each area can occur at differing sites and times and by different individuals during the program. Residents receive an evaluation by the staff involved for each rotation completed, the contents of which should be discussed with the resident. At the end of 6 months, a summative evaluation is completed and reviewed with the resident by the program director. Areas of weakness should be discussed and plans made to address these weaknesses.

Objectives of Training and Training Requirements In Adult Neurology

GENERAL OBJECTIVES:

Residents must demonstrate the knowledge, skills and attitudes relating to gender, culture and ethnicity pertinent to neurology. In addition, all residents must demonstrate an ability to incorporate gender, cultural and ethnic perspectives in research methodology, data presentation and analysis.

On completion of the educational program, the graduate physician will be competent to function as a consultant neurologist. This requires the physician to:

1. Provide scientifically based, comprehensive and effective diagnosis and management plan for patients with neurological disorders.
2. Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals.
3. Counsel patients and others on aspects of prevention of neurological disorders, including risk factors, and genetic and environmental concerns.
4. Maintain complete and accurate medical records.

5. Effectively coordinate the work of the health care team.
6. Be an effective teacher of other physicians (including medical students and house officers), other health care personnel and patients and their family.
7. Be proficient in professional and technical skills related to the specialty.
8. Demonstrate personal and professional attitudes consistent with a consultant physician role.
9. Be willing and able to appraise accurately his or her own professional performance.
10. Be willing and able to keep his or her practice current through reading and other modes of continuing medical education.
11. Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and management.
12. Be able to participate in clinical or basic science studies as a member of a research team.

SPECIFIC OBJECTIVES:

1. Medical Expert/Clinical Decision Maker

2. Communicator

3. Collaborator

4. Manager

5. Health Advocate

6. Scholar

7. Professional

1. Medical Expert/Clinical Decision-Maker

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Requirements

Provide scientifically based, comprehensive and effective diagnosis and management for patients with neurological disorders.

Clinical Skills

For a patient with a neurological complaint or disorder, the physician will be able to:

- Obtain a complete neurological history from adults and children obtaining a collateral history where necessary.
- Perform an appropriate physical examination.
- Determine whether a patient's symptoms and signs are the result of an organic or psychological disorder. Where they are due to an organic disorder, the resident must determine whether they result from unifocal, multifocal or diffuse involvement of the nervous system and, where possible, appropriately localize the lesion(s).
- Formulate an appropriate differential and provisional diagnosis.
- Outline an appropriate plan of laboratory investigation.
- Outline an appropriate therapeutic plan.

- Exhibit appropriate clinical judgment in outlining a differential diagnosis and an investigative and therapeutic plan, taking into account matters such as the patient's age, general health, risk and cost of investigative procedures, risk and cost of therapeutic interventions, and epidemiology of the disease.

Technical Skills

- Perform a lumbar puncture, vestibular testing (Dix-Halpike), caloric testing, apnea test, assess for diagnosis of brain death.
- Identify and describe abnormalities seen in common neurological disorders on plain x-rays, cerebral and spinal angiograms, computerized tomography (CT) of the brain and spinal column, magnetic resonance imaging (MRI) of the brain and spinal column.
- With regard to a specific patient or clinical history, evaluates the relevance of a specific report on the following investigative procedures: electroencephalogram; motor and sensory nerve conduction study; electromyography; evoked responses; electronystagmogram; audiogram; perimetry; psychometry; cerebrospinal fluid (CSF) analysis; plain x-ray; angiogram; ultrasound and CT, MRI scans of the neuraxis.
- Identify and describe gross and microscopic specimens taken from the normal nervous system and from the nervous system of patients affected by the major neurological disorders.

Knowledge

- As a basis for clinical competence, the neurologist must be familiar with and able to describe or discuss:

- the clinical features, including presenting signs and symptoms, natural history, and prognosis, for the major neurological disorders including: neurological complications of systemic diseases, trauma to the nervous system, cerebrovascular disorders, nervous system tumors, infections of the nervous system, demyelinating disorders, anoxic/ischemic and toxic/metabolic encephalopathies, deficiency syndromes, neurocutaneous disorders, dementias, movement disorders, the epilepsy syndromes and clinical seizure types, headache disorders, sleep disorders, neurological disorders of pregnancy, disorders/diseases of the following anatomic structures; cerebellum, cranial nerves, special senses, roots, plexi, peripheral nerves, neuromuscular junctions, muscle
- the clinical features of the major psychiatric syndromes and their known or postulated neuro-chemical basis
- the embryological development of the nervous system and how congenital anomalies arise from disorders of this process
- the gross and microscopic anatomy of the nervous system, nerve roots, peripheral nerves, muscles and the vascular system of the nervous system; this includes the recognition of the structures in both anatomical and neuro-imaging formats (when technically feasible)
- the anatomy, composition and physiology of myelin
- the mechanisms underlying the resting membrane potential, conduction of an action potential and synaptic transmission
- axonal transport
- the major neurotransmitters and neuromodulators including their clinical significance
- the role of trophic factors in the nervous system
- the formation and circulation of the cerebrospinal fluid (CSF)

- the biologic basis for the blood-brain, blood-cerebrospinal fluid and blood-nerve barriers, and their clinical importance in health and disease
- cerebral blood flow and cerebral metabolism
- function and dysfunction of the immune system with particular emphasis on the implications for nervous system disease
- the anatomical and physiological basis of consciousness, sleep and wakefulness
- the anatomical and physiological basis of speech, memory, learning and behaviour
- the anatomical and physiological basis of the following systems: special senses, sensory, motor, autonomic, limbic, and reticular activating system
- the physiology of the following major subdivisions of the central nervous system: major cortical regions, basal ganglia, thalamus, cerebellum, reticular activating system, respiratory centres and the limbic system
- the anatomic and physiologic basis of the normal neurological examination taking into account the effect of age
- the pathophysiology of neurologic symptoms and signs in the major, primary and secondary neurologic disorders; (examples of these include seizures, spasticity, tremor, aphasia, etc.)
- the basic principles underlying the interpretation of the major clinical tests such as nerve conduction studies, electromyography, electroencephalography, evoked potentials, perimetry, electronystagmography, audiometry, psychometry and CSF analysis; the indications for, and potential value of and limitations and contraindications for, the tests in any clinical situation where their use is being contemplated
- the indications for, side effects and dosages of the major agents used in neurologic therapeutics
- the mechanism(s) of action of the major drugs used in neurological therapeutics

- the teratogenic effects of the major drugs used in neurological therapeutics
- the mechanism(s) of action of apheresis including the rational for the therapeutic usefulness of the procedure in specific neurological diseases, and the indications and contraindications for its use
- the role of surgery in the therapy of neurological disorders including indications and contraindications for its use
- the role of rehabilitative medicine in the treatment of neurological disorders
- the basic histopathologic reactions which occur in nervous system disorders
- the pathologic changes (gross and microscopic) occurring in the major neurologic diseases
- infectious diseases of the nervous system
- the major bacteria causing nervous system infections including classification, staining characteristics, and antibiotic sensitivities
- the basic principles of clinical genetics
- the basic mechanisms of chromosomal division, and chromosomal abnormalities seen in the major neurological disorders that result from disturbances in these mechanisms
- the patterns of inheritance, where known, of neurological disorders
- the principles underlying and the diagnostic value of gene localization
- the biochemical basis for the major neurologic syndromes resulting from inborn errors of metabolism
- the basic procedures used in clinical epidemiology and the clinical epidemiology of nervous system disorders
- the major neurotoxicologic agents and their effects
- the therapeutic and toxic effects of irradiation on nervous tissue, its role in the treatment of, and its relationship to the production of nervous system disorders

2. Communicator

General Requirements

- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively.
- Discuss appropriate information with patients/families and the health care team.

Specific Requirements

Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals in both the inpatient and outpatient settings. The Neurologist will:

- Communicate effectively and regularly with patients and their families.
- Be considerate and compassionate in communicating with patients and families, willingly provide accurate information appropriate to the clinical situation, with a reasonable attempt at prognosis.
- Communicate effectively and appropriately with nurses and paramedical personnel.
- When ordering investigative procedures, ensure there has been adequate communication about the patient with the person who will actually be doing and/or reporting the diagnostic study.

Counsel patients and others about aspects of prevention of neurologic disorders, including risk factors, and genetic and environmental concerns. The neurologist will:

- Recognize that complete patient care requires that, in addition to the need for making a correct diagnosis, a search for risk factors for the disorder be undertaken.
- Recognize that treatment for a patient with a neurological disorder may require in addition to specific medical and surgical interventions, the elimination of risk factors and genetic counselling.

3. Collaborator

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

Be an effective teacher of other physicians (including medical students and house officers), other health care personnel, and patients. The neurologists will:

- Provide instruction to medical students and more junior physicians at a level appropriate to their clinical education and professional competence.
- Willingly share knowledge with others with whom they are associated, thus ensuring the most effective delivery of health care to patients.
- Participate in multi-disciplinary ward rounds where and when appropriate.

4. Manager

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate finite health care resources wisely.

- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

Be proficient in professional skills related to the specialty.

Demonstrate the following professional skills in time management:

- Recognize that effective use of time depends upon punctuality.
- Recognize that effective use of time requires planning.
- Develop speed as well as accuracy in clinical skills.
- Reserve time for reading and keeping current with the neurological literature.
- Establish routines for carrying out regular activities and adhere to them.

Maintain complete and accurate medical records:

- Record and maintain a complete and accurate medical record for every patient seen; this record will include the patient's history and the findings on physical examination (including the neurological examination), a differential diagnosis, a provisional diagnosis, and a plan for management, appropriate progress notes, and a comprehensive discharge summary.

Effectively coordinate the work of the health care team:

- Organize and supervise the more junior physicians and medical students on a ward and/or consultation service in a manner that ensures the efficient and effective delivery of health care for the patients.
- Indicate, by the treatment plan, that for the optimal treatment of many patients with neurological disorder, a

team approach is necessary -- members of the team may include nurses, rehabilitation personnel (physiotherapists, occupational therapists, speech therapists, etc.), psychologists, social workers, etc.

- Identify where an important role(s) can be played by disease focused lay groups with regard to helping the patient and/or family and to facilitate its happening.

5. Health Advocate

General Requirements

Identify the important determinants of health affecting patients.

Contribute effectively to improved health of patients and communities.

Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

Learn about community resources and related patient support groups; provide assistance to access programs (e.g. home care, occupational and physiotherapy, drug plans, application for nursing homes etc) and participate in their activities.

Educate, be able to generate and access information (e.g. printed material, video tapes web sites) and be available as a resource person to counsel patients effectively on neurological disorders.

Counsel patients on the importance of taking responsibility for their own well-being and recognize the important determinants predisposing to neurological disorders (e.g. risk factors for transient ischemic attack (TIA) and stroke, teratogenic effects of anti-epileptic drugs).

Understand the role of national and international bodies (e.g. Alzheimer, Stroke, Multiple Sclerosis Societies) in the promotion of neurological health, and the prevention, detection, and treatment of neurological disorders.

6. Scholar

General Requirements

Develop, implement and monitor a personal continuing education strategy.

Critically appraise sources of medical information.

Facilitate learning of patients, house staff/students and other health professionals.

Contribute to development of new knowledge.

Specific Requirements

Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and treatment:

- Develop criteria for evaluating neurological literature.
- Critically assess the neurological literature using these criteria.
- Be familiar with the design of experimental and observational studies, especially randomized controlled trials.
- Be able to calculate absolute risk reductions, relative risk reductions and numbers needed to treat or harm.

Be able to participate in clinical or basic science studies as a member of a research team:

- Be able to describe principles of good research.
- Use the above principles, and be able to judge whether a research project is properly designed.
- Be prepared to present research findings to peers at local, national or international conferences.

7. Professional

General Requirements

Deliver highest quality care with integrity, honesty and compassion.

Exhibit appropriate personal and interpersonal professional behaviours with patients/families, peer residents. And other health care professionals.

Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

Demonstrate personal and professional attitudes consistent with a consulting physician role:

- Periodically review his/her own personal and professional performance against national standards set for the specialty.
- Be willing to include the patient in discussions concerning appropriate diagnostic and management procedures.
- Show appropriate respect for the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.

Be willing and able to appraise accurately his/her own professional performances and show that he/she recognizes his/her own limitations with regard to skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Be willing and able to keep his/her practice current through reading and other modes of continuing medical education and develop a habit of maintaining current his/her clinical skill and knowledge base through continuing medical education.

Adult Neurology Residency Training Program

Goals of training during the training phases

1) PGY1

This year is devoted to internal medicine in order to maximize the amount of internal medicine training given to the neurology trainee.

2) Phase I (PGY 2-3)

During this first 24 months of neurology training, the trainee should:

- Acquire the ability to do a detailed neurological history and physical exam, develop a basic differential diagnosis and investigation plan
- Achieve at least the minimum training standards in paediatric neurology for adult trainees
- Develop preliminary understanding of the usefulness, indications, contraindications, risks of diagnostic studies and the interpretation of test results including EEG, EMG and neuroimaging
- Be able to recognize and manage common neurological emergencies such as meningitis, subarachnoid bleed, herniation syndromes and cord compression.
- Be able to recognize and manage common psychiatric disorders including acute agitation, schizophrenia, bipolar disorders, acute adjustment disorders and depression
- Be competent to work-up common neurological problems of in-patients and out-patients
- Show developing consultation skills

3) Phase II (PGY 4-5)

During these 18 months of neurology training, the trainee will:

- Develop increased out-patient management skills
- Improve technique of neurological history and physical exam
- Demonstrate further sophistication in evaluation of diagnostic tests particularly in imaging and electrophysiology
- Develop clinical and laboratory skills in EMG and neuromuscular diseases
- Develop good clinical consultation skills, particularly the recognition and treatment of neurological emergencies
- Develop competence in teaching skills
- Develop and consolidate knowledge related to subspecialty areas via elective rotations (psychiatry, neurosurgery, neuroradiology, neuro-ophthalmology, movement disorders etc.)
- Supervise and teach more junior trainees and effectively manage an inpatient ward service

5) Phase III (PGY 5)

The final year of training should allow the resident to refine skills attained in the previous years with emphasis on developing expertise and interest in out-patient and subspecialty areas of neurology. The clinics should be a mixture of general and subspecialty clinics, and are to be tailored to meet the individual residents' needs and interests. During this phase of training, the resident will need:

- To rapidly and accurately evaluate neurological patients and provide appropriate recommendations on management

- To function effectively in an outpatient clinic setting

- To demonstrate an understanding of disease pathogenesis and epidemiology, and to critically analyse the neurological literature

- To communicate effectively and compassionately with patients and family members regarding diagnosis, investigation, treatment and prognosis

- To know when consultation with colleagues is appropriate

- To be aware of the ethical issues common to neurological cases and to be able to guide colleagues, students and families in decision making relevant to such issue

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program

Rotation Specific Objectives

EEG/Epilepsy Rotation

Outline of the Rotation

During the first 2 weeks of this rotation, residents are to familiarize themselves with how to read and interpret normal and abnormal electroencephalograms. Such learning in meant to continue for the entire 8 week rotation but will be most intense during the initial 2 weeks. The resident will attend one or two EEG sessions (2 to 3 hours per session) daily for the first 2 weeks and will be under the supervision of the EEG staff member. Every week the resident will read and interpret a number of EEG's for the sessions he/she will attend.

During their experience on the inpatient epilepsy service, residents are exposed to patients with a wide range of epileptic problems. There are patients with uncertain diagnosis where the primary aim is clarification. Patients with pseudoseizures often require clarification by in patient investigation as well. Patients with generalized epilepsy often require further investigation and initiation of changes in treatment in the hospital. The majority of patients suffer from partial seizures and a great many of these are surgical candidates. The patients present a wide range of medical, cognitive, psychiatric and social economic problems. The investigation is complex and is never routine. The major studies are neurophysiological, neuropsychological, psychiatric, and imaging both advanced MRI and function of imaging including SPECT and more recently increased access to positron emission tomography. There have recently been a valuable deluge of new antiepileptic drugs available most of which are familiar to the members of the staff and are currently used in our work.

EEG/Epilepsy Rotation Specific Objectives

1. Medical Expert/Clinical Decision-Maker

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Objectives

Provide scientifically based, comprehensive and effective diagnosis and management for patients with neurological disorders.

Clinical

For a patient with an epileptic or allied disorder, the resident will be able to:

- Obtain a complete neurological history from adults and children obtaining a collateral history where necessary, particularly from those who have witnessed the seizures.
- Perform an appropriate physical examination.
- Determine whether a patient's symptoms and signs are the result of an epileptic disorder or psychological disorder.
- Formulate an appropriate differential and provisional diagnosis of the seizure type and epilepsy syndrome, if appropriate.
- Outline an appropriate plan of laboratory investigation.
- Outline an appropriate therapeutic plan.
- Exhibit appropriate clinical judgment in outlining a differential diagnosis and an investigative and therapeutic plan, taking into account matters such as the patient's age, general health, risk and cost of investigative procedures, risk and cost of therapeutic interventions, and epidemiology of the disease.

Technical Skills

The resident is expected to become familiar the basic principles and general technical aspects of the electroencephalogram (EEG) recording

- Understand and identify the routine recording montages
- Identify a normal and abnormal EEG recording
- Identify focal and generalized epileptiform/epileptic discharges
- Identify the EEG patterns associated with drowsiness/sleep, encephalopathies, periodic discharges, focal slowing, response to stimulation and intermittent photic stimulation
- Be familiar with video-telemetry recordings
- Be exposed to specialized recordings (e.g. sphenoidal electrodes, depth electrodes)

Knowledge

- Acquire and understand the neuroanatomic principles and pathological substrates of epilepsy.
- Become familiar with the neurophysiological principles, the basic mechanisms of epileptogenesis and the basic principles of electroencephalography.
- Learn clinical epileptology. They should become familiar with the international classification of epileptic seizures, the clinical and EEG manifestations of the various epilepsy syndromes, the investigation and treatment of epileptic patients and in the differential diagnosis of paroxysmal and neurological events in addition to the epilepsies. They should become familiar with the evaluation and treatment of seizures sociated with non neurological medical conditions and of status epilepticus.
- Learn clinical neuropharmacology: i. Neuropharmacology of the AEDs, ii. principles of drug therapy (the choice of AEDs, when and how to initiate drug therapy, when and how to monitor drug therapy, when and how to withdraw and discontinue drug therapy), iii. Principles of clinical use of specific AEDs, iv. Drug toxicity, interaction and teratogenicity.
- Acquire expertise in surgical treatment of the epilepsy mainly in the decision making process and will have the opportunity of following the

patients both before and after surgery giving them an understanding of functional neurosurgery.
- Learn about the psychosocial aspects of epilepsy: i.Cognitive effects, ii. Psychiatric aspects, iii. Legal aspect.

2. Communicator

General Requirements

- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively.
- Discuss appropriate information with patients/families and the health care team.

Specific Requirements

Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals in both the inpatient and outpatient settings. The resident will:

- Communicate effectively and regularly with patients and their families.
- Be considerate and compassionate in communicating with patients and families; willingly provide accurate information appropriate to the clinical situation, with a reasonable attempt at prognosis.
- Communicate effectively and appropriately with the epilepsy service nurse practitioner, other nurses and paramedical personnel.
- When ordering investigative procedures, ensure there has been adequate communication about the patient with the person who will actually be doing and/or reporting the diagnostic study.

Counsel patients and others about the aspects of prevention of recurrent seizures, including predisposing and precipitating factors. The resident will:

- Recognize that complete patient care requires that, in addition to the need for making a correct diagnosis, a search for risk factors for the disorder be undertaken.

- Recognize that treatment for a patient with an epileptic disorder may require in addition to specific medical and surgical interventions, the elimination of risk factors and genetic counselling.

3. Collaborator

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

Be an effective teacher of other physicians (including medical students and house officers), other health care personnel, and patients. The resident will:

- Provide instruction to medical students and more junior physicians at a level appropriate to their clinical education and professional competence.
- Willingly share knowledge with others with whom they are associated, thus ensuring the most effective delivery of health care to patients.
- Participate in multi-disciplinary ward rounds where and when appropriate.
- Work effectively with the epilepsy service nurse practitioner

4. Manager

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

Be proficient in professional skills related to the diagnosis and treatment of the epileptic disorders.

Demonstrate the following professional skills in time management:

- Recognize that effective use of time depends upon punctuality.
- Recognize that effective use of time requires planning.
- Develop speed as well as accuracy in clinical skills.
- Reserve time for reading and keeping current with the neurological literature.
- Establish routines for carrying out regular activities and adhere to them.

Maintain complete and accurate medical records:

- Record and maintain a complete and accurate medical record for every patient seen; this record will include the patient's history and the findings on physical examination (including the neurological examination), a differential diagnosis, a provisional diagnosis, a plan for management, appropriate progress notes, and a comprehensive discharge summary.

Effectively coordinate the work of the health care team:

Organize and supervise the more junior physicians and medical students on a ward and/or consultation service in a manner that ensures the efficient and effective delivery of health care for the patients.

- Indicate, by the treatment plan, that for the optimal treatment of many patients with neurological disorder, a team approach is necessary. Members of the team may include nurses, rehabilitation personnel (physiotherapists, occupational therapists, speech therapists, etc.), psychologists, social workers, etc.
- Identify where an important role(s) can be played by disease focused lay groups with regard to helping the patient and/or family and to facilitate its happening.

5. Health Advocate

General Requirements

Identify the important determinants of health affecting patients.

Contribute effectively to improved health of patients and communities.

Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

Learn about community resources and related patient support groups; provide assistance to access programs (e.g. home care, occupational and physiotherapy, drug plans, application for nursing homes etc) and participate in their activities.

Educate, be able to generate and access information (e.g. printed material, video tapes web sites) and be available as a resource person to counsel patients effectively on neurological disorders.

Counsel patients on the importance of taking responsibility for their own well-being and recognize the important determinants predisposing to recurrent seizures (sleep deprivation, medication compliance, etc.) and the teratogenic effects of anti-epileptic drugs.

Understand the role of national and international bodies (e.g. International League Against Epilepsy) in the promotion of neurological health, and the prevention, detection, and treatment of epileptic disorders.

6. Scholar

General Requirements

Develop, implement and monitor a personal continuing education strategy.

Critically appraise sources of medical information.

Facilitate learning of patients, house staff/students and other health professionals.

Contribute to development of new knowledge.

Specific Requirements

Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and treatment:

- Develop criteria for evaluating neurological literature.

- Critically assess the neurological literature using these criteria.
- Be familiar with the design of experimental and observational studies, especially randomized controlled trials.
- Be able to calculate absolute risk reductions, relative risk reductions and numbers needed to treat or harm.

Be able to participate in clinical or basic science studies as a member of a research team:

- Be able to describe principles of good research.
- Use the above principles, and be able to judge whether a research project is properly designed.
- Be prepared to present research findings to peers at local, national or international conferences.
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7. Professional

General Requirements

Deliver highest quality care with integrity, honesty and compassion.

Exhibit appropriate personal and interpersonal professional behaviours with patients/families, peer residents and other health care professionals.

Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

Demonstrate personal and professional attitudes consistent with a consulting physician role:

- Periodically review his/her own personal and professional performance against national standards set for the specialty.
- Be willing to include the patient in discussions concerning appropriate diagnostic and management procedures.
- Show appropriate respect for the opinions of fellow consultants and referring physicians in the management of patient problems and be willing

to provide means whereby differences of opinion can be discussed and resolved.

Be willing and able to appraise accurately his/her own professional performances and show that he/she recognizes his/her own limitations with regard to skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Be willing and able to keep his/her practice current through reading and other modes of continuing medical education and develop a habit of maintaining current his/her clinical skill and knowledge base through continuing medical education.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Rotation Outline and Goals and Objectives

Electromyography/Neuromuscular Rotation

Outline of rotation

The rotation combines practical training in clinical electrophysiology with exposure to a large volume of common out-patient disorders of the peripheral nervous system. Residents will participate in the performance and interpretation of nerve conductions and electromyography.

Overall goals of rotation

1. To provide the fundamental training in neuromuscular diseases necessary for the competent practice of neurology regardless of the specific subspecialty interest of the neurologist. More specifically, all neurology trainees should accomplish the following during this rotation:

2. To become competent at examining patients with generalized and focal peripheral neuropathies, primary muscle diseases, disorders of the neuromuscular junction, anterior horn cell disorders.

3. To become familiar with the criteria for diagnosing patients in these specific disease categories.

4. To learn how to investigate patients with neuromuscular diseases to establish or confirm the diagnosis and where appropriate to attempt to determine the specific cause.

5. To gain experience in the treatment of neuromuscular diseases, the role of physiotherapy, genetic counseling.

6. EMG techniques: To learn

    a. The important principles underlying nerve conduction studies and needle EMG examination.

b. To understand the role and the limitations of these techniques in the diagnosis of neuromuscular diseases.

c. To become familiar with the approaches for evaluating patients with the neuromuscular disorders listed above.

d. To be able to understand reports from an EMG Laboratory.

e. To understand the basic principles of the technical equipment used in the EMG Laboratory.

7. Nerve-muscle histopathology: To learn

a. The indications for and limitations of nerve and muscle biopsies

EMG/Neuromuscular Rotation Specific Objectives

1. <u>Medical Expert/Clinical Decision-Maker</u>

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Objectives

Provide scientifically based, comprehensive and effective diagnosis and management for patients with neurological disorders.

Clinical

For a patient with a neuromuscular or allied disorder, the resident will be able to:

- Obtain a complete neurological history from adults and children obtaining a collateral history where necessary

- Perform an appropriate physical examination.
- Determine whether a patient's symptoms and signs are the result of a disorder referable to the peripheral nervous system
- Formulate an appropriate localization, differential and provisional diagnosis of the neuromuscular disorder if appropriate.
- Outline an appropriate plan of laboratory investigation.
- Outline an appropriate therapeutic plan.
- Exhibit appropriate clinical judgment in outlining a differential diagnosis and an investigative and therapeutic plan, taking into account matters such as the patient's age, general health, risk and cost of investigative procedures, risk and cost of therapeutic interventions, and epidemiology of the disease.

Technical Skills

- To learn/review detailed, practical anatomy of the peripheral nervous system.

- To improve and refine the clinical examination of the peripheral nervous system. In particular, to confidently and accurately evaluate representative muscles innervated by all major nerve roots and somatic motor nerves, and to distinguish between true weakness and give-way weakness.

- To gain experience with the diagnosis of the common PNS disorders: carpal tunnel syndrome, polyneuropathy, cervical and lumbar radiculopathy, lumbar and cervical spinal stenosis, ulnar neuropathy, peroneal neuropathy, meralgia paraesthetica.

- To learn how to interpret nerve conduction studies.

- To gain experience performing the common motor and sensory nerve conduction studies.

- To learn how to perform and interpret the findings from concentric needle examination. Basic technical skills include the ability to accurately locate commonly examined muscles

and methods to minimize patient discomfort. Residents should be able to recognize and understand the significance of the following EMG phenomena (a basic but not comprehensive list):

- Insertional activity (normal, increased, decreased)
- End plate. noise and end plate spikes
- Fibrillation potentials and positive sharp waves
- Complex repetitive discharges (CRD's)
- Myotonic discharges
- Motor unit potential duration and amplitude
- Motor unit potential recruitment (normal, decreased, increased or rapid)
- Motor unit potential polyphasia
- Large ("neurogenic") motor unit potentials

Knowledge

- Acquire and understand the neuroanatomic principles and pathological substrates of disorders of the peripheral nervous system.
- Become familiar with the neurophysiological principles, the basic mechanisms of neural transmission and principals of clinical electrophysiological studies.
- Learn the major categories of diseases, congenital, genetic and acquired of the anterior horn cell, nerve roots, mixed peripheral nerves, neuromuscular junction and muscles.
- Learn clinical neuropharmacology related to the treatment of: i. neuropathic pain, ii. Myasthenia gravis, iii. Immune-mediated disorders of the peripheral nervous system.
- Acquire expertise in the decision making related to nerve and muscle biopsies.

2. Communicator

General Requirements

- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively.

- Discuss appropriate information with patients/families and the health care team.

Specific Requirements

Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals in both the inpatient and outpatient settings. The resident will:

- Communicate effectively and regularly with patients and their families.
- Be considerate and compassionate in communicating with patients and families; willingly provide accurate information appropriate to the clinical situation, with a reasonable attempt at prognosis.
- Learn to write concise reports of the electrophysiological findings with conclusions and possibly recommendations comprehensible to the non-specialist.
- Communicate effectively and appropriately with the nurses and paramedical personnel.
- When ordering investigative procedures, ensure there has been adequate communication about the patient with the person who will actually be doing and/or reporting the diagnostic study.

3. <u>Collaborator</u>

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

Be an effective teacher of other physicians (including medical students and house officers), other health care personnel, and patients. The resident will:

- Provide instruction to medical students and more junior physicians at a level appropriate to their clinical education and professional competence.
- Willingly share knowledge with others with whom they are associated, thus ensuring the most effective delivery of health care to patients.

4. Manager

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

Be proficient in professional skills related to the diagnosis and treatment of peripheral nervous system/neuromuscular disorders.

Demonstrate the following professional skills in time management:

- Recognize that effective use of time depends upon punctuality.
- Recognize that effective use of time requires planning.
- Develop speed as well as accuracy in clinical skills.
- Reserve time for reading and keeping current with the neurological literature.
- Establish routines for carrying out regular activities and adhere to them.

Maintain complete and accurate medical records:

- Record and maintain a complete and accurate medical record for every patient seen; this record will include the patient's history and the findings on physical examination (including the neurological examination), a differential diagnosis, a provisional diagnosis, Effectively coordinate the work of the health care team: .
- Indicate, by the treatment plan, that for the optimal treatment of many patients with neurological disorder, a team approach is necessary -- members of the team may include nurses, rehabilitation personnel (physiotherapists,

occupational therapists, speech therapists, etc.), psychologists, social workers, etc.

- Identify where an important role(s) can be played by disease focused lay groups with regard to helping the patient and/or *f*amily and to facilitate its happening.

5. Health Advocate

General Requirements

Identify the important determinants of health affecting patients.

Contribute effectively to improved health of patients and communities.

Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

Learn about community resources and related patient support groups; provide assistance to access programs (e.g. home care, occupational and physiotherapy, drug plans, application for nursing homes etc) and participate in their activities.

Educate, be able to generate and access information (e.g. printed material, video tapes web sites) and be available as a resource person to counsel patients effectively on neurological disorders.

Counsel patients on the importance of taking responsibility for their own well-being and recognize the important determinants predisposing to worsening of neurological status

Understand the role of national and international bodies in the promotion of neurological health, and the prevention, detection, and treatment of peripheral nervous system disorders.

6. Scholar

General Requirements

Develop, implement and monitor a personal continuing education strategy.

Critically appraise sources of medical information.

Facilitate learning of patients, house staff/students and other health professionals.

Contribute to development of new knowledge.

Specific Requirements

Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and treatment:

- Develop criteria for evaluating neurological literature.
- Critically assess the neurological literature using these criteria.
- Be familiar with the design of experimental and observational studies, especially randomized controlled trials.
- Be able to calculate absolute risk reductions, relative risk reductions and numbers needed to treat or harm.

Be able to participate in clinical or basic science studies as a member of a research team:

- Be able to describe principles of good research.
- Use the above principles, and be able to judge whether a research project is properly designed.
- Be prepared to present research findings to peers at local, national or international conferences.

7. Professional

General Requirements

Deliver highest quality care with integrity, honesty and compassion.

Exhibit appropriate personal and interpersonal professional behaviours with patients/families, peer residents and other health care professionals.

Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

Demonstrate personal and professional attitudes consistent with a consulting physician role:

- Periodically review his/her own personal and professional performance against national standards set for the specialty.
- Be willing to include the patient in discussions concerning appropriate diagnostic and management procedures.
- Show appropriate respect for the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.

Be willing and able to appraise accurately his/her own professional performances and show that he/she recognizes his/her own limitations with regard to skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Be willing and able to keep his/her practice current through reading and other modes of continuing medical education and develop a habit of maintaining current his/her clinical skill and knowledge base through continuing medical education.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Objectives of Training and Training Requirements

Neuro-radiology Rotation Specific Objectives for Neurology Residents

GENERAL OBJECTIVES:

Neuroradiology training is a mandatory component of the neurology residency training program. It is imperative that neurology residents learn the appropriate use of diagnostic imaging as it pertains to patients with neurological disorders, and that they learn the basics of interpretation.

The neuroradiology rotation is designed to give neurology residents the skills required to review routine CT scans, MRI scans and other diagnostic imaging techniques by one-on-one teaching with the neuroradiologists/neuroradiology fellows, attendance at teaching rounds and self-directed study.

The residents will be expected to participate in all daily activities involving reviewing and reporting of neuroimaging cases along with consultant. Residents will also participate in rounds and teaching sessions planned by the neuroradiologists during the rotation.

The resident will be able to demonstrate knowledge concerning the appropriate diagnostic imaging techniques and imaging findings for most of the following clinical conditions/problems:

Congenital Malformations

-Chiari malformation
-holoprosencephaly

-microcephaly
-heterotopic grey matter
-pachygyria-polymicrogyria
-lissencephaly
-schizencephaly
-neurocutaneous syndromes

Trauma

-epidural hematoma
-acute subdural hematoma
-subacute subdural hematoma
-chronic subdural hematoma
-traumatic subarachnoid hemorrhage
-cerebral contusion
-diffuse axonal injury
-subcortical injury
-intracranial herniation syndromes
-hydrocephalus
-traumatic cerebral edema
-traumatic cerebral ischemia
-brain death
-traumatic intracranial dissection
-traumatic extracranial dissection
-traumatic carotid-cavernous fistula

Stroke

-intracerebral hematoma
-aneurysmal subarachnoid hemorrhage
-intracranial & extracranial atherosclerosis
-moya moya
-primary arteritis of the CNS
-vasculitis
-cerebral amyloid disease
-CADASIL
-hypoxic -ischemic encephalopathy
-acute cerebral ischemia-infarction
-subacute cerebral infarction

-chronic cerebral infarction
-lacunar infarction
-hypotensive cerebral infarction
-dural venous thrombosis
-cortical venous thrombosis
-deep cerebral venous thrombosis

Vascular Malformations

-arteriovenous malformations
-dural A-V fistula
-developmental venous anomaly
-cavernous malformation
-capillary telangiectasia

Neoplasms and Tumor like Lesions

-astrocytoma
-brainstem glioma
-gliomatosis cerebri
-oligodendroglioma
-ependymoma
-subependymoma
-choroid plexus papilloma
-pineoblastoma
-pineocytoma
-medulloblastoma
-neuroblastoma, metastatic
-schwannoma
-neurofibroma
-hemangioblastoma
-primary CNS lymphoma
-germinoma
-teratoma
-parenchymal metastases
-paraneoplastic syndromes
-pituitary macroadenoma
-craniopharyngioma

Infections

-Congenital CMV
-Congenital HIV
-Meningitis
-Abscess
-Ventriculitis
-Empyema
-Herpes encephalitis
-Tuberculosis
-Neurocysticercosis
-Fungal diseases
-HIV encephalitis

Demyelinating Disease

-Multiple sclerosis
-ADEM
-Subacute sclerosing panencephalitis (SSPE)

Dementias and Degenerative Disorders

-Aging brain, normal
-Alzheimer dementia
-Multi-infarct dementia
-Frontotemporal dementia
-CJD
-Parkinson disease
-MSA

Toxic/Metabolic Disorders + miscellaneous, acquired

-kernicterus
-Fahr disease
-PRES
-idiopathic intracranial hypertension
-CO poisoning
-osmotic demyelination syndrome
-radiation & chemotherapy
-mesial temporal sclerosis
-intracranial hypotension

Metabolic/degenerative disorders, Inherited

-normal myelination
-hypomyelination
-Leigh syndrome
-MELAS
-lysosomal disorders
-peroxisomal disorders
-organic and aminoacidopathies
-Huntington Disease
-PKAN II
-Wilson Disease

Spinal Cord

-myelomeningocele/meningocele
-diastematomyelia
-tethered cord
-syringomyelia
-tumours (extra & intradural)
-spinal AVM
-disc herniation
-transverse myelitis
-Devic's disease

- Residents should exhibit appropriate personal and interpersonal professional behaviors.
- Be willing to participate in case discussions concerning appropriate diagnostic procedures
- Be willing and able to appraise accurately his/her own professional performance in that he/she recognizes his/her own limitations with regard to skill and knowledge and appropriately consulting other physicians as needed.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Objectives of Training and Training Requirements

Neurosurgery Rotation Specific Objectives

GOAL & DESCRIPTION:

The neurosurgery rotation is designed to give neurology residents the skills required to care for patients acutely ill with neurosurgical problems. The neurology resident will be under the guidance of a consultant neurosurgeon or senior neurosurgery resident at all times. Each patient will be fully discussed with the consultant neurosurgeon and/or his/her senior resident regarding diagnosis and treatment.

OBJECTIVES:

- Residents will be able to perform an efficient, reliable neurological history and examination.
- Residents will be able to determine if the patient has a neurosurgical problem and whether or not operative intervention is required.
- Residents will gain a broad experience in assessing and managing a wide variety of neurosurgery inpatients.
- Residents will develop competence in handling neurosurgical emergencies i.e. recognize and treat temporal lobe herniation, recognize obstructive hydrocephalus and seek timely help for insertion of EVD, recognize possible spinal cord injury and importance of neck immobilization etc.
- Residents will develop an understanding of the tiered approach to the treatment of increased intracranial pressure in neurosurgical patients
- (hyperosmolar therapy, steroids were applicable, ventriculostomy, intubation/hyperventilation/sedation, etc).

- Residents will develop competence at identifying subdural hematomas, epidural hematomas and subarachnoid hemorrhage, and be able to take appropriate action to stabilize the patient and prepare them for surgery if necessary.
- Residents will be able to discuss the indications for and basic elements of interpretation of special tests and neuroradiological procedures used in neurosurgery.
- Residents will assist in the operating theatre when their help is required by the staff neurosurgeon with special emphasis on neuroanatomy.
- Residents will learn how to obtain informed consent for operative procedures.
- Residents will communicate the patient's current status, diagnosis, prognosis, treatment options, and risks/benefits of consenting or not consenting to specific recommendations clearly, concisely and with utmost respect for the patient's cultural and educational background.
- Residents will write clear, concise and accurate notes on charts, discharge summaries, reports, letters, etc.
- Residents will communicate effectively with the physicians and allied health professionals performing investigative or therapeutic procedures on their patients.
- Residents will provide constructive feedback to their neurosurgery educators.
- residents will work cooperatively and effectively with the multidisciplinary health care team to develop acute care and discharge planning for patients with acute neurosurgical disorders
- Residents will show punctuality, prioritization and good time management.
- Residents will ensure continuity of care and effective transfer of medical/surgical information to other health care professionals.
- Residents will ensure appropriate follow-up is arranged for their patients.
- Residents will recognize and respect individual religious, ethnic/cultural, linguistic, gender, age, and sexual orientation differences among patients and co-workers.
- Residents will practice medicine ethically, consistent with the obligations of a physician based on legal and professional standards.
- Residents will be aware of their own limitations and will solicit help when appropriate.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Objectives of Training and Training Requirements

For Outpatient Neurology Clinics

Outline of the Rotation

During the final four months of training, during PGY5, residents will be assigned to a variety of general neurology and sub-specialty neurology outpatients clinics located at the adult neurology training hospitals. The overall objective of this rotation is to expose senior residents, on a long term basis, to the variety of neurological problems seen on an out-patient basis and to provide exposure to the pace of activity required to efficiently run an outpatient clinic. Residents will be exposed to and understand the importance of continuity of outpatient medical care. Also, residents will gain further experience in:

1) Triaging with respect to limited imaging resources
2) Providing immediate clinical feedback to patients and families and
3) Summarizing clinical impressions and investigation plans in consultation notes.

Residents will be under the direct supervision of the staff member responsible for the particular clinic. It is expected that residents will have the opportunity to assess new consultations (2 to 3 new patients per half-day clinic) as well as see follow-ups: particularly if the patient has been initially assessed by the resident. Staff will reserve sufficient free time during scheduled clinics in order to review cases with the residents. Residents are expected to dictate consultation notes to the referring physician and/or enter written clinical notes into the patients' charts. Such communications and notes are to be reviewed by the staff supervisor.

1. Medical Expert/Clinical Decision-Maker

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Requirements

Provide scientifically based, comprehensive and effective diagnosis and management for outpatients with neurological disorders.

Clinical Skills

For a patient with a neurological complaint or disorder, the physician will be able to:

- Obtain a complete neurological history from adults and children obtaining a collateral history where necessary.
- Perform an appropriate physical examination.
- Determine whether a patient's symptoms and signs are the result of an organic or psychological disorder. Where they are due to an organic disorder, the resident must determine whether they result from unifocal, multifocal or diffuse involvement of the nervous system and, where possible, appropriately localize the lesion(s).
- Formulate an appropriate differential and provisional diagnosis.
- Outline an appropriate plan of laboratory investigation.
- Outline an appropriate therapeutic plan.
- Exhibit appropriate clinical judgment in outlining a differential diagnosis and an investigative and therapeutic plan, taking into account matters such as the patient's age, general health, risk and cost of

investigative procedures, risk and cost of therapeutic interventions, and epidemiology of the disease.

Technical Skills

- Vestibular testing (Dix-Hallpike).
- Identify and describe abnormalities seen in common neurological disorders on plain x-rays, cerebral and spinal angiograms, computerized tomography (CT) of the brain and spinal column, magnetic resonance imaging (MRI) of the brain and spinal column.
- With regard to a specific patient or clinical history, evaluates the relevance of a specific report on the following investigative procedures: electroencephalogram; motor and sensory nerve conduction study; electromyography; evoked responses; electronystagmogram; audiogram; perimetry; psychometry; cerebrospinal fluid (CSF) analysis; plain x-ray; angiogram; ultrasound and CT, MRI scans of the neuraxis.
- Identify and describe gross and microscopic specimens taken from the normal nervous system and from the nervous system of patients affected by the major neurological disorders.

Knowledge

- As a basis for clinical competence, the neurologist must be familiar with and able to describe or discuss:
- the clinical features, including presenting signs and symptoms, natural history, and prognosis, for the major neurological disorders including: neurological complications of systemic diseases, trauma to the nervous system, cerebrovascular disorders, nervous system tumors, infections of the nervous system, demyelinating disorders, anoxic/ischemic and toxic/metabolic encephalopathies, deficiency syndromes, neurocutaneous disorders, dementias,

movement disorders, the epilepsy syndromes and clinical seizure types, headache disorders, sleep disorders, neurological disorders of pregnancy, disorders/diseases of the following anatomic structures; cerebellum, cranial nerves, special senses, roots, plexi, peripheral nerves, neuromuscular junctions, muscle

- the clinical features of the major psychiatric syndromes and their known or postulated neurochemical basis
- anatomical and neuro-imaging formats (when technically feasible)
- the anatomic and physiologic basis of the normal neurological examination taking into account the effect of age
- the pathophysiology of neurologic symptoms and signs in the major, primary and secondary neurologic disorders; (examples of these include seizures, spasticity, tremor, aphasia, etc.)
- the basic principles underlying the interpretation of the major clinical tests such as nerve conduction studies, electromyography, electroencephalography, evoked potentials, perimetry, electronystagmography, audiometry, psychometry and CSF analysis; the indications for, and potential value of and limitations and contraindications for, the tests in any clinical situation where their use is being contemplated
- the indications for, side effects and dosages of the major agents used in neurologic therapeutics
- the mechanism(s) of action of the major drugs used in neurological therapeutics
- the teratogenic effects of the major drugs used in neurological therapeutics
- the role of surgery in the therapy of neurological disorders including indications and contraindications for its use
- the role of rehabilitative medicine in the treatment of neurological disorders

- the pathologic changes (gross and microscopic) occurring in the major neurologic diseases
- infectious diseases of the nervous system
- the major bacteria causing nervous system infections including classification, staining characteristics, and antibiotic sensitivities
- the basic principles of clinical genetics
- the basic mechanisms of chromosomal division, and chromosomal abnormalities seen in the major neurological disorders that result from disturbances in these mechanisms
- the patterns of inheritance, where known, of neurological disorders
- the principles underlying and the diagnostic value of gene localization
- the biochemical basis for the major neurologic syndromes resulting from inborn errors of metabolism
- the major neurotoxicologic agents and their effects
- the therapeutic and toxic effects of irradiation on nervous tissue, its role in the treatment of, and its relationship to the production of nervous system disorders

2. Communicator

General Requirements

- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively.
- Discuss appropriate information with patients/families and the health care team.

Specific Requirements

Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals in the outpatient settings. The Neurologist will:

- Communicate effectively and regularly with patients and their families.
- Be considerate and compassionate in communicating with patients and families; willingly provide accurate information appropriate to the clinical situation, with a reasonable attempt at prognosis.
- Communicate effectively and appropriately with nurses and paramedical personnel.
- When ordering investigative procedures, ensure there has been adequate communication about the patient with the person who will actually be doing and/or reporting the diagnostic study.

Counsel patients and others about aspects of prevention of neurologic disorders, including risk factors, and genetic and environmental concerns. The neurologist will:

- Recognize that complete patient care requires that, in addition to the need for making a correct diagnosis, a search for risk factors for the disorder be undertaken.
- Recognize that treatment for a patient with a neurological disorder may require in addition to specific medical and surgical interventions, the elimination of risk factors and genetic counselling.

3. <u>Collaborator</u>

General Requirements

- Consult effectively with other physicians and health care professionals.

- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

Be an effective teacher of other physicians, particularly the referring physician, as well as a teacher to the patient and family members.

4. <u>Manager</u>

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

Be proficient in professional skills related to the specialty in the outpatient setting.

Demonstrate the following professional skills in time management:

- Recognize that effective use of time depends upon punctuality.
- Recognize that effective use of time requires planning.
- Develop speed as well as accuracy in clinical skills.
- Reserve time for reading and keeping current with the neurological literature.
- Establish routines for carrying out regular activities and adhere to them.

Maintain complete and accurate medical records:

- Record and maintain a complete and accurate medical record for every patient seen; this record will include the patient's history and the findings on physical examination (including the neurological examination), a differential diagnosis, a provisional diagnosis, a plan for management, appropriate progress notes, and a comprehensive discharge summary.

Effectively coordinate the work of the health care team:

- Indicate, by the treatment plan, that for the optimal treatment of many patients with neurological disorder, a team approach is necessary -- members of the team may include nurses, rehabilitation personnel (physiotherapists, occupational therapists, speech therapists, etc.), psychologists, social workers, etc.
- Identify where an important role(s) can be played by disease focused lay groups with regard to helping the patient and/or family and to facilitate its happening.

5. Health Advocate

General Requirements

Identify the important determinants of health affecting patients.

Contribute effectively to improved health of patients and communities.

Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

Learn about community resources and related patient support groups; provide assistance to access programs (e.g. home care, occupational and physiotherapy, drug plans, application for nursing homes etc) and participate in their activities.

Educate, be able to generate and access information (e.g. printed material, video tapes web sites) and be available as a resource person to counsel patients effectively on neurological disorders.

Counsel patients on the importance of taking responsibility for their own well-being and recognize the important determinants predisposing to neurological disorders (e.g. risk factors for transient ischemic attack (TIA) and stroke, teratogenic effects of anti-epileptic drugs).

Understand the role of national and international bodies (e.g. Alzheimer, Stroke, Multiple Sclerosis Societies) in the promotion of neurological health, and the prevention, detection, and treatment of neurological disorders.

6. Scholar

General Requirements

Develop, implement and monitor a personal continuing education strategy.

Critically appraise sources of medical information.

Facilitate learning of patients, house staff/students and other health professionals.

Contribute to development of new knowledge.

Specific Requirements

Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and treatment:

- Develop criteria for evaluating neurological literature.
- Critically assess the neurological literature using these criteria.

- Be familiar with the design of experimental and observational studies, especially randomized controlled trials.
- Be able to calculate absolute risk reductions, relative risk reductions and numbers needed to treat or harm.

7. Professional

General Requirements

Deliver highest quality care with integrity, honesty and compassion.

Exhibit appropriate personal and interpersonal professional behaviours with patients/families, peer residents and other health care professionals.

Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

Demonstrate personal and professional attitudes consistent with a consulting physician role:

- Periodically review his/her own personal and professional performance against national standards set for the specialty.
- Be willing to include the patient in discussions concerning appropriate diagnostic and management procedures.
- Show appropriate respect for the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.

Be willing and able to appraise accurately his/her own professional performances and show that he/she recognizes his/her own limitations with regard to skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Be willing and able to keep his/her practice current through reading and other modes of continuing medical education and develop a habit of maintaining current his/her clinical skill and knowledge base through continuing medical education.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Objectives of Training and Training Requirements

Pediatric Neurology for Adult Neurology Residents

All trainees in Adult Neurology will spend 2 months on the Child Neurology Service.

GENERAL OBJECTIVES:

Residents must demonstrate the knowledge, skills and attitudes relating to age, gender, culture and ethnicity pertinent to pediatric neurology. In addition, all residents must demonstrate an ability to incorporate age, gender, cultural and ethnic perspectives in research methodology, data presentation and analysis.

On completion of the educational program, the graduate physician will be competent to function as a consultant neurologist. This requires the physician to:

13. Provide scientifically based, comprehensive and effective diagnosis and management plan for patients with neurological disorders.
14. Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals.
15. Counsel patients and their families and others on aspects of prevention of neurological disorders, including risk factors, and genetic and environmental concerns.
16. Maintain complete and accurate medical records.
17. Effectively coordinate the work of the health care team.
18. Be an effective teacher of other physicians (including medical students and house officers), other health care personnel and patients and their family.
19. Be proficient in professional and technical skills related to the specialty.

20. Demonstrate personal and professional attitudes consistent with a consultant physician role.
21. Be willing and able to appraise accurately his or her own professional performance.
22. Be willing and able to keep his or her practice current through reading and other modes of continuing medical education.
23. Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and management.
24. Be able to participate in clinical or basic science studies as a member of a research team.

SPECIFIC OBJECTIVES:

At the completion of training, the resident will acquire the following competencies and will function effectively in the following CanMEDS roles as:

1. <u>Medical Expert/Clinical Decision-Maker</u>

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Requirements

Provide scientifically based, comprehensive and effective diagnosis and management for patients with neurological disorders.

Clinical Skills

For a patient with a neurological complaint or disorder, the physician will be able to:

- Obtain a complete neurological history from children and/or their parents, obtaining a collateral history where necessary.
- To obtain an accurate and complete history and carry out a competent neurological examination in a pediatric setting. Trainees will be expected to acquire and accurately record a family history reinforcing their understanding of various modes of inheritance of genetic disorders. They will be expected to take an accurate history of pregnancy, labour and delivery, and to have an understanding of the neonatal period and developmental milestones.
- Obtain a history and physical examination in the Neonatal Intensive Care Unit and in the Pediatric Intensive Care Unit.
- Perform an appropriate physical examination.
- Determine whether a patient's symptoms and signs are the result of an organic or psychological disorder. Where they are due to an organic disorder, the resident must determine whether they result from unifocal, multifocal or diffuse involvement of the nervous system and, where possible, appropriately localize the lesion(s).
- Formulate an appropriate differential and provisional diagnosis.
- Outline an appropriate plan of laboratory investigation.
- Outline an appropriate therapeutic plan.
- Exhibit appropriate clinical judgment in outlining a differential diagnosis and an investigative and therapeutic plan, taking into account matters such as the patient's age, general health, risk and cost of investigative procedures, risk and cost of therapeutic interventions, and epidemiology of the disease.

- To learn how to function in a pediatric outpatient setting via

New patient clinics: the evaluation of patients never previously seen in Neurology employing the basic clinical skills previously mentioned. This setting would also be used to teach communication with parents, of interim diagnostic impressions, plans for investigation and possible therapeutic plans.

Follow-up clinics: to develop skills in rapid chart review, extracting pertinent data, good concise record keeping. The development of good communication skills in reporting previous results, assessing ongoing progress, and encouraging compliance with treatment will be encouraged.

Telephone communication: working with the Neurology nurse and will full Neurology staff support, the trainee will learn how to evaluate clinical situations over the telephone. He is expected to formulate accurate impressions and plans of action.

Technical Skills

- Perform a lumbar puncture in a pediatric patient.
- Identify and describe abnormalities seen in common neurological disorders on plain x-rays, cerebral and spinal angiograms, computerized tomography (CT) of the brain and spinal column, magnetic resonance imaging (MRI) of the brain and spinal column.
- With regard to a specific patient or clinical history, evaluates the relevance of a specific report on the following investigative procedures: electroencephalogram; motor and sensory nerve conduction study; electromyography; evoked responses; electronystagmogram; audiogram; perimetry; psychometry; cerebrospinal fluid (CSF) analysis; plain x-

ray; angiogram; ultrasound and CT, MRI scans of the neuraxis.

- Identify and describe gross and microscopic specimens taken from the normal nervous system and from the nervous system of patients affected by the major neurological disorders.

Knowledge

- As a basis for clinical competence, the neurologist must be familiar with and able to describe or discuss:
- the clinical features, including presenting signs and symptoms, natural history, and prognosis, for the major neurological disorders including: neurological complications of systemic diseases, trauma to the nervous system, cerebrovascular disorders, nervous system tumors, infections of the nervous system, demyelinating disorders, anoxic/ischemic and toxic/metabolic encephalopathies, deficiency syndromes, neurocutaneous disorders, movement disorders, the epilepsy syndromes and clinical seizure types, headache disorders, disorders/diseases of the following anatomic structures; cerebellum, cranial nerves, special senses, roots, plexi, peripheral nerves, neuromuscular junctions, muscle
- the embryological development of the nervous system and how congenital anomalies arise from disorders of this process
- the gross and microscopic anatomy of the nervous system, nerve roots, peripheral nerves, muscles and the vascular system of the nervous system; this includes the recognition of the structures in both anatomical and neuro-imaging formats (when technically feasible)
- the anatomy, composition and physiology of myelin
- the mechanisms underlying the resting membrane potential, conduction of an action potential and synaptic transmission
- axonal transport

- the major neurotransmitters and neuromodulators including their clinical significance
- the role of trophic factors in the nervous system.
- the formation and circulation of the cerebrospinal fluid (CSF)
- the biologic basis for the blood-brain, blood-cerebrospinal fluid and blood-nerve barriers, and their clinical importance in health and disease
- cerebral blood flow and cerebral metabolism
- function and dysfunction of the immune system with particular emphasis on the implications for nervous system disease
- the anatomical and physiological basis of consciousness, sleep and wakefulness
- the anatomical and physiological basis of speech, memory, learning and behaviour
- the anatomical and physiological basis of the following systems: special senses, sensory, motor, autonomic, limbic, and reticular activating system
- the physiology of the following major subdivisions of the central nervous system: major cortical regions, basal ganglia, thalamus, cerebellum, reticular activating system, respiratory centres and the limbic system
- the anatomic and physiologic basis of the normal neurological examination taking into account the effect of age
- the pathophysiology of neurologic symptoms and signs in the major, primary and secondary neurologic disorders; (examples of these include seizures, spasticity, tremor, etc.)
- the basic principles underlying the interpretation of the major clinical tests such as nerve conduction studies, electromyography, electroencephalography, evoked potentials, perimetry, electronystagmography, audiometry, psychometry and CSF analysis; the indications for, and potential value of and limitations and

contraindications for, the tests in any clinical situation where their use is being contemplated.

- the indications for, side effects and dosages of the major agents used in neurologic therapeutics
- the mechanism(s) of action of the major drugs used in neurological therapeutics
- the teratogenic effects of the major drugs used in neurological therapeutics
- the role of surgery in the therapy of neurological disorders including indications and contraindications for its use
- the role of rehabilitative medicine in the treatment of neurological disorders
- the basic histopathologic reactions which occur in nervous system disorders
- the pathologic changes (gross and microscopic) occurring in the major neurologic diseases
- infectious diseases of the nervous system
- the major bacteria causing nervous system infections including classification, staining characteristics, and antibiotic sensitivities
- the basic principles of clinical genetics
- the basic mechanisms of chromosomal division, and chromosomal abnormalities seen in the major neurological disorders that result from disturbances in these mechanisms
- the patterns of inheritance, where known, of neurological disorders
- the principles underlying and the diagnostic value of gene localization
- the biochemical basis for the major neurologic syndromes resulting from inborn errors of metabolism
- the basic procedures used in clinical epidemiology and the clinical epidemiology of nervous system disorders
- the major neurotoxicologic agents and their effects

- the therapeutic and toxic effects of irradiation on nervous tissue, its role in the treatment of, and its relationship to the production of nervous system disorders
- Trainees will have some basic knowledge of

Prenatal Encephalopathies:
Cerebral Dysgenesis

- Concept of "Cerebral Palsy"
- Chromosomal abnormalities.

Perinatal encephalopathies: Hypoxic ischemic encephalopathy – pathophysiology, pathology, clinical syndromes.

The understanding of static versus progressive encephalopathies
Progressive encephalopathies – understanding of the clinical course, pathophysiology, and underlying genetics of:

- lysosomal storage disorders
- mitochondrial encephalopathies,
- peroxisomal disorders.

Epilepsy

- Classification of seizures
- Classification of epilepsies
- Anticonvulsant medications
- Status epilepticus in childhood
- Childhood epileptic syndromes
  e.g; Landau-Kleffner syndrome
  Myoclonic epilepsies

- Non epileptic paroxysmal disorders of childhood;
  e.g. syncope and migraine

The evaluation of the child with developmental delay, learning disorder, neurobehavioral disorders, e.g. ADHD.

Basic understanding of the principles of neurogenetics to be carried out through the neurogenetics clinics and neurofibromatosis clinics

Neuromuscular disorders in childhood
Anterior horn cell, peripheral nerve, disorders of the neuromuscular junction and m2uscle in childhood.

2. Communicator

General Requirements

- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively.
- Discuss appropriate information with patients/families and the health care team.

Specific Requirements

Communicate effectively with patients, their families and medical colleagues (particularly referring physicians), and other health care professionals in both the inpatient and outpatient settings. The Neurologist will:

- Communicate effectively and regularly with patients and their families.
- Be considerate and compassionate in communicating with patients and families; willingly provide accurate information appropriate to the clinical situation, with a reasonable attempt at prognosis.

- Communicate effectively and appropriately with nurses and paramedical personnel.
- When ordering investigative procedures, ensure there has been adequate communication about the patient with the person who will actually be doing and/or reporting the diagnostic study.

Counsel patients and their families and others about aspects of prevention of neurologic disorders, including risk factors, and genetic and environmental concerns. The neurologist will:

- Recognize that complete patient care requires that, in addition to the need for making a correct diagnosis, a search for risk factors for the disorder be undertaken.
- Recognize that treatment for a patient with a neurological disorder may require in addition to specific medical and surgical interventions, the elimination of risk factors and genetic counseling.

3. <u>Collaborator</u>

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

Be an effective teacher of other physicians (including medical students and house officers), other health care personnel, and patients. The neurologists will:

- Provide instruction to medical students and more junior physicians at a level appropriate to their clinical education and professional competence.
- Willingly share knowledge with others with whom they are associated, thus ensuring the most effective delivery of health care to patients.
- Participate in multi-disciplinary ward rounds where and when appropriate.

4. Manager

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

Be proficient in professional skills related to the specialty.

Demonstrate the following professional skills in time management:

- Recognize that effective use of time depends upon punctuality.
- Recognize that effective use of time requires planning.
- Develop speed as well as accuracy in clinical skills.
- Reserve time for reading and keeping current with the neurological literature.

- Establish routines for carrying out regular activities and adhere to them.

Maintain complete and accurate medical records:

- Record and maintain a complete and accurate medical record for every patient seen; this record will include the patient's history and the findings on physical examination (including the neurological examination), a differential diagnosis, a provisional diagnosis, a plan for management, appropriate progress notes, and a comprehensive discharge summary.

Effectively coordinate the work of the health care team:

- Organize and supervise the more junior physicians and medical students on a ward and/or consultation service in a manner that ensures the efficient and effective delivery of health care for the patients.
- Indicate, by the treatment plan, that for the optimal treatment of many patients with neurological disorder, a team approach is necessary -- members of the team may include nurses, rehabilitation personnel (physiotherapists, occupational therapists, speech therapists, etc.), psychologists, social workers, etc.
- Identify where an important role(s) can be played by disease focused lay groups with regard to helping the patient and/or family and to facilitate its happening.

5. Health Advocate

General Requirements

Identify the important determinants of health affecting patients.

Contribute effectively to improved health of patients and communities.

Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

Learn about community resources and related patient support groups; provide assistance to access programs (e.g. home care, occupational and physiotherapy, etc) and participate in their activities.

Educate, be able to generate and access information (e.g. printed material, video tapes web sites) and be available as a resource person to counsel patients effectively on neurological disorders.

Counsel patients and families on the importance of taking responsibility for their own well-being and recognize the important determinants predisposing to neurological disorders

Understand the role of national and international bodies in the promotion of neurological health, and the prevention, detection, and treatment of neurological disorders.

6. Scholar

General Requirements

Develop, implement and monitor a personal continuing education strategy.

Critically appraise sources of medical information.

Facilitate learning of patients, house staff/students and other health professionals.

Contribute to development of new knowledge.

Specific Requirements

Be able to critically assess the neurological literature as it relates to patient diagnosis, investigation and treatment:

- Develop criteria for evaluating neurological literature.

- Critically assess the neurological literature using these criteria.
- Be familiar with the design of experimental and observational studies, especially randomized controlled trials.
- Be able to calculate absolute risk reductions, relative risk reductions and numbers needed to treat or harm.

Be able to participate in clinical or basic science studies as a member of a research team:

- Be able to describe principles of good research.
- Use the above principles, and be able to judge whether a research project is properly designed

7. Professional

General Requirements

Deliver highest quality care with integrity, honesty and compassion.

Exhibit appropriate personal and interpersonal professional behaviours with patients/families, peer residents. And other health care professionals.

Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

Demonstrate personal and professional attitudes consistent with a consulting physician role:

- Periodically review his/her own personal and professional performance against national standards set for the specialty.
- Be willing to include the patient in discussions concerning appropriate diagnostic and management procedures.

- Show appropriate respect for the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.

Be willing and able to appraise accurately his/her own professional performances and show that he/she recognizes his/her own limitations with regard to skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Be willing and able to keep his/her practice current through reading and other modes of continuing medical education and develop a habit of maintaining current his/her clinical skill and knowledge base through continuing medical education.

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Academic half day/Educational activities

GENERAL OBJECTIVES:

- The program will have weekly academic half day, this will be held weekly (Monday) from the first of October till the end of June. The time will be from 8 till 1 pm.
- Conference leave is possible, and each resident allowed for one week/academic year to attend such activities.
- The aim of this activity is to strengthen resident knowledge and make sure that they are exposed to most of the fields in Neurology.
- The academic activities will be conducted either by faculty staff or any other doctors needed to give a specific educational material to the residents. Also the activities may include bed side teaching or didactic teaching or journal club.
- The program also will have some workshops and scientific symposium either held by local speakers or speaker from outside.
- The attendance for such activities is obligatory and the residents should be excused from the service they are doing at that time. Attendance sheet should be sign by attended residents.
- The schedule for academic activities will be send to residents either twice or three times/year. This schedule may change location or topic according to the needs of the program and doctors availability.
- Residents are encouraged during the year to participate in choosing topics and specific areas they need to expose more.
- Residents are obliged to give presentations during the year; this will enhance the ability of giving lectures and the communications skills of residents.

KIMS

Neurology Residency Program

Kuwait Neurology program
Recommended books:

1- Adams and Victor's Principles of Neurology, Ninth Edition. Allan Ropper (Author), Martin Samuels (Author).

2- Bradley's Neurology in Clinical Practice. Robert B. Daroff MD (Author), Gerald M Fenichel MD (Author), Joseph Jankovic MD (Author), John Mazziotta (Author).

3- Localization in Clinical Neurology. Paul W. Brazis (Author), Joseph Masdeu (Author), José Biller MD FACP FAAN FAHA (Author).

4- Neurology and General Medicine. Michael J. Aminoff MD DSc FRCP.

5- Principles of Neural Science. Eric Kandel (Author), James Schwartz (Author), Thomas Jessell (Author).

6- Aids to the Examination of the Peripheral Nervous System. Michael O'Brien MD FRCP (Author).

7- Fisch and Spehlmann's EEG Primer: Basic Principles of Digital and Analog EEG. Bruce Fisch (Author).

8- Primer of EEG: With A Mini-Atlas. A. James Rowan (Author), Eugene Tolunsky (Author).

9- Neuroanatomy Through Clinical Cases, Second Edition. Hal Blumenfeld (Author).

10- Electromyography and Neuromuscular Disorders: Clinical-Electrophysiologic Correlations. David C. Preston (Author), Barbara Shapiro (Author).

11- Electromyography in Clinical Practice: A Case Study Approach. Bashar Katirji (Author).

12- Escourolle and Poirier's Manual of Basic Neuropathology. Francoise Gray (Author), Jacques Poirier (Author), Umberto De Girolami (Author).

13- Neuroanatomy: An Atlas of Structures, Sections, and Systems. Duane E. Haines PhD (Author).

List of Clinical Tutors/ Site Coordinator

Faculty Members of Neurology 2013 - 2014

Hospital/ Center/ Clinic	Specialty	Name	Position	Phone	Mobile	Fax	Email
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Amiri Hospital	Neurologist	Dr. Khalid Al-Hassan	Assistant Program Director and Coordinator	22467499	99412100		khalid@mac.com
Ibn Sina Hospital	Neurologist	Dr. John K John	Assistant Program Director and Coordinator	24840300 * 5022* 5053	66203651	24835286	johnkjohn101@gmail.com
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Faculty Of Medicine	Secretary	Sini Mohandas	Secretary	24636311	97960596	25338907	sini@hsc.edu.kw

KIMS

Neurology Residency Program

Adult Neurology Residency Training Program
Process of Examination

- The neurology residency program will have only one final exam at the end of the fifth year.
- The exam will be held in two days. The first day will be written and the second day will be OSCE stations.
- The written exam will be divided in two parts. The first part will be three hours and will be focused on basic science. The second part will be three hours and will be focused on the clinical part. There will be an hour rest between the two parts. All questions are short assays questions. During the residency, residents will be exposed to similar questions during their residency.
- The second day will be OSCE stations. This part will have external examiners and it will range from 10-12 stations. The aim of the OSCE is to check different field in neurology and to make sure about the resident skills in examination and also communication skills.
- The resident should pass the two parts and not only one part.
- During the residency, the program will have in training OSCE in order to expose residents for such experience before they sit for the exam.
- The program also will have the **RITE** exam (Residency In-service Training Exam). This exam will be given for R3 and above.
- Final In Training Evaluation Report (**FITER**), should be submitted by the program for each resident sitting for the final exam.
- Evaluations for residents during their residency will be taken in consideration by the program director in order for the resident to sit for the exam.