

# NEUROLOGY SENIOR RESIDENCY

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## **TRAINING REQUIREMENTS**

### **(A) INTRODUCTION**

The Neurology Residency Programme is a competency-based programme designed to meet specific outcomes in the 7 key competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, system-based practice and faculty development.

The programme includes 3 years of full time Neurology education which is preceded by a broad-based clinical educational programme in internal medicine. This broad-based clinical education is typically attained via the Singapore Internal medicine residency programme. The 3-year Neurology education provides a continuous core of active participatory study and service based experience in Neurology and clinical exposure to the various core neurology subspecialties.

### **(B) PROGRAMME OVERVIEW**

#### **CORE CONTENT IN NEUROLOGY**

The core content has been selected based on the major neurology themes that are key for independent clinical practice as a neurologist.

#### **Core Content**

##### 1. Neuroscience and Applied Core Aspects

- Neuroanatomy
- Neurochemistry
- Neuroepidemiology
- Neurogenetics & molecular biology applied to neurosciences
- Neuropathology
- Neuropharmacology
- Neurophysiology

##### 2. Neurological Localization

##### 3. Approach to common symptom complexes

- Acute mental status changes
- Clumsiness
- Cognitive and memory complaints
- Diffuse weakness
- Diplopia
- Dizziness / vertigo
- Focal weakness
- Gait disturbance

Headache  
Involuntary movements  
Numbness, paresthesias or sensory complaints  
Pain  
Sleep disturbances  
Speech and language disturbances  
Transient or episodic alteration of consciousness, seizures  
Transient or episodic focal symptoms  
Vision loss

The above approaches should be learnt in the context of clinical neurology in the modules listed below. This list of approaches cannot be exhaustive; residents are encouraged to formulate additional approaches as they progress.

#### 4. Core Clinical Topics

Cerebrovascular Diseases  
Correlative and Clinical Neurophysiology  
Epileptology  
Headache Disorders  
Infections of the Nervous System  
Movement Disorders  
Neurodegenerative & cognitive disorders  
Neuroimaging  
Neurology of Common Medical Disorders  
Neurological Rehabilitation  
Neuromuscular Disorders  
Neuro-Oncology  
Neuro-ophthalmology  
Neuropsychiatry  
Sleep Disorders  
The Role of Neurosurgery and Orthopaedic Surgery in Neurology

Candidates may also spend up to 12 months on elective rotations which may include the following:

Neuro-Intensive Care (up to 3 months)

Other suitable optional postings include: (not more than 2 months per posting)

- Neurosurgery
- Ophthalmology or otolaryngology
- Paediatric neurology

Candidates can also opt to focus on any of the core clinical topics as an elective (e.g. Movement disorders, stroke)

During the electives, the candidate, in consultant with the program director, should run supervised longitudinal care outpatient clinics with responsibility for neurology follow-ups as well as referrals.

Residents have to complete and be assessed by the program to have achieved training objectives of chosen electives.

Residents shall complete their training in all the core training topics and electives by performing adequately before being allowed to take the final exit examination. If the resident fails to fulfil the requirements set out for a particular topic, the resident shall undergo further training in that topic until the requirements are fully met.

Quarterly reviews by the resident's supervisor shall be carried out to ensure that progress towards attaining training objectives and competencies is made.

## **(C) ADMISSION REQUIREMENTS**

The principal qualifying pre-requisites for entry into this programme typically include the successful completion of a structured broad-based clinical educational programme in internal medicine and the attainment of the MRCP (UK) and/or Master of Medicine (Internal Medicine) (NUS) qualifications. *Potential candidates outside this typical stream would need to seek ratification from JCST before they can be considered for the programme.*

## **(D) TRAINING REQUIREMENTS**

### **KEY COMPETENCIES**

The training programme aims to achieve the desired outcomes in the 7 key competencies of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, system-based practice and faculty development.

The 7 key competencies identified are:

#### **A. Patient Care**

Early in their education, residents should become competent in basic neurology clinical skills required for the diagnosis, evaluation and proper management of common and uncomplicated cases. As residents progress in educational level, they should be able to demonstrate patient care skills with non-routine, complicated patients and under increasingly challenging clinical settings. Residents shall learn how to engage with compassion and communicate effectively with patients with regards to diagnosis, management, and counselling and health education.

To achieve this, the residents shall:

- i) Attend clinic sessions scheduled:
  - Present and discuss all new cases with the Consultants
  - Present and discuss all complex review cases with the Consultants

- ii) Record the required number of case reports and presentations to reflect the range of cases managed. The resident should also record learning points and reflections about the cases managed.
- iii) Manage inpatients & outpatients with common neurological symptoms and conditions independently, including:
  - History taking, physical exam
  - Making a diagnosis, formulating a holistic management plan
  - Communicating with patient & family
  - Exercising clinical reasoning & clinical judgement
- iv) Interpret the results of common neurological tests, and contextualize this to patients
  - Includes neuroimaging, EEG, NCS/EMG, u/s carotids
- v) Perform common tests used in evaluation of patients
  - Lumbar puncture, NCS/EMG

## **B. Medical Knowledge**

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.

To achieve this, the residents shall:

- i) Attend academic activities which may include:
  - Tutorials, book / research / journal clubs
  - Basic science lectures
  - Clinico-pathological conferences
  - Conference updates
  - Clinical, imaging, and histological slide reviews
  - Case presentations and literature reviews
- ii) Complete the core curriculum using methods such as didactic teaching sessions, active case discussions with faculty and self-directed learning.

### **C. Practice-based Learning and Improvement**

Residents must demonstrate the ability:

- To investigate and evaluate their care of patients
- To appraise and assimilate scientific evidence
- And to continuously improve patient care based on constant self-evaluation and life-long learning.

To achieve this, the residents shall:

- Identify strengths, deficiencies, and limits in one's knowledge and expertise
- Set learning and improvement goals
- Identify and perform appropriate learning activities
- Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
- Incorporate formative evaluation feedback into daily practice
- Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems;
- Use information technology to optimize learning
- Participate in the education of patients, families, students, residents and other health professionals.
- Provide appropriately up-to-date medical care, and also:
  - Search for best evidence if the need arises
  - Appropriately consult or refer to a colleague for an opinion if uncertain
- Conduct teaching
  - At the workplace (wards / clinics / bedside) for junior learners (e.g. medical students, junior doctors)
  - For peers & colleagues, e.g. journal clubs, case presentations, or grand rounds

### **D. Interpersonal and Communication Skills**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

To achieve this, the residents shall:

- Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
- Communicate effectively with physicians, other health professionals, and health related agencies
- Work effectively as a member or leader of a health care team or other professional group
- Act in a consultative role to other physicians and health professionals;
- Maintain comprehensive, timely, and legible medical records

## **E. Professionalism**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

To achieve this, the residents shall show:

- Compassion, integrity, and respect for others
- Responsiveness to patient needs that supersedes self-interest
- Respect for patient privacy and autonomy
- Accountability to patients, society, fellow healthcare workers and the profession
- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

## **F. System-based Practice**

The resident must appreciate that he is part of a larger system and be aware of the other inter-related services contributing to the overall care of the patient. It is important for the resident to appreciate the core values of professionalism and collegiality and develop a healthy and positive working relationship with fellow residents, faculty, and nursing and other allied health staff.

To achieve this, the residents shall:

- Work effectively in various health care delivery settings and systems relevant to neurology
- Coordinate patient care within the health care system relevant to neurology;
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate
- Advocate for quality patient care and optimal patient care systems;
- Work in inter-professional teams to enhance patient safety and improve patient care quality
- Participate in identifying system errors and implementing potential systems solutions.

## **G. Faculty Development**

In addition to (C) Practice based learning and Improvement, the Sponsoring Institution (SI) must ensure that the resident:

- Has the documented opportunity to teach juniors and medical students
- Is recommended to attend at least 1 faculty development course in his final residency year

## **4. PROGRAM RESOURCES**

The program shall ensure that faculty (physician and non-physician) have sufficient time to supervise and teach residents.

Adequate educational and clinical resources shall be made available for resident education. This includes exposure to both ambulatory and inpatients, including inpatients calls and consults, giving them both the range and as well the depth of exposure required under supervision.

## 5. EVALUATION

Evaluation shall be both formative as well as summative. The following table provides selected methods of formative evaluation and evaluators used for assessing resident competence in each of the six required competencies. Summative assessment shall take the form of the Exit evaluation conducted at the end of the 3-year program by a panel comprising of at least 2 RAC members in the presence of an external examiner.

Tool	Frequency	MK	PC	SBP	PBLI	Prof	Comms	Comments
Mini CEX	Every 3/12	◆	◆			◆	◆	
Annual ITE MCQ exam	Annual	◆	◆	◆	◆			
360 deg / multisource feedback	To do between 12 <sup>th</sup> and 18 <sup>th</sup> month of training			◆		◆	◆	
Case-based discussion	Every 3/12	◆	◆	◆	◆			
Ward Assessment	Every 3/12	◆	◆	◆	◆	◆	◆	Done by Ward consultant

## (E) SUPERVISION AND WORK HOURS OF RESIDENTS

### I. Supervision

All residents will be supervised by a designated supervisor. The ratio of all teaching faculty to residents should be 1:1. The number of core clinical faculty to resident ratio must be no less than 1:2 for internal medicine-related subspecialties. 20% of resident's time should be protected for training.

### II. Work Hours

Work hours can be defined as all clinical and academic activities related to residency training. Work hours should not exceed 80 hours per week, averaged over a month, including all on-calls. Residents should be allowed 1 day (i.e. 24 continuous hours) in 7 days free from all clinical administrative and academic responsibilities, averaged over a month. Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all daily duty periods and after in-house call.

In-house call must occur no more frequently than every third night, averaged over a four-week period. Ideally, no new patients to be seen by the resident after 24 hours of continuous duty. Continuous on-site duty, including in-house call, should not exceed 24 consecutive hours. Residents may continue to be on duty for up to six additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care. Residents, however, must be cognisant of the fact that in-house calls create valuable learning experiences in the specialty.

Work hours are to be tracked by the Programme Director.

## **F) ASSESSMENT AND EXAMINATIONS**

### **I. Exit Exam Format**

The exit examination consists of two components. Either components can be taken first.

(a) Royal College of Physicians (UK) Neurology Specialty Certification Examination (SCE)

- 200 MCQs taken as written component

(b) Objective Structured Clinical Examination (OSCE)

- 8 stations

### **II. Marking Scheme**

To pass the OSCE, the candidates must achieve:

- 1) a score at or above the pass mark for each station, for at least 5 out of 8 stations
- 2) a mean score at or above the pass mark

### **III. Resits**

Candidates must pass both the Neurology SCE and the OSCE, before they are allowed to exit from the Residency Programme (i.e., non-compensatory). Multiple attempts at any component will be allowed provided that it falls within the allowable maximum period for residency training.

### **IV. Effective Date of Exit Examination**

The above-mentioned exit examination format will apply to senior residents exiting in Year 2019 and onwards.

## **(G) ASSESSMENT AND FEEDBACK**

### **I. Log of procedures / clinical experience**

All residents are expected to keep a log of their procedures / clinical experience in a designated case log system.

### **II. Assessment**

The supervisor's evaluation of the resident should be performed at least 6-monthly using the designated form and then submitted to the RAC for review.

### **III. Feedback**

Residents should perform a yearly evaluation of teaching faculty and the training programme using the designated forms. These forms must be submitted to the RAC and kept absolutely confidential. *(KIV to engage IT systems for the provision of the survey)*

## **(H) CHANGES IN TRAINEESHIP PERIOD AND LEAVE OF ABSENCE**

### **I. Changes in Training Period**

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC may at its discretion, require the resident to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All residents are required to conform to the residency training plan as approved by the RAC and complete all the exit and training requirements within the maximum candidature.

### **II. Leave Of Absence**

All residents are to comply with the prevailing MOH policy on Leave of Absence.

### **III. Overseas Postings**

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (*refer to JCST Circular 114/14*).