Specialty Training Requirements (STR)

Name of Specialty:	Neurology
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Date of submission:	1 December 2025

Contents

Note: In addition to the training requirements stated in this STR, residents must comply with any other regulatory requirements or practice-based requirements mandated by the healthcare institutions or place of practice.

Scope of Neurology

Neurology is the branch of medicine concerned with the study and treatment of disorders of the nervous system including their coverings, blood vessels, and all effector tissue, such as muscle.

Purpose of the Residency Programme

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

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

Admission Requirements

At the point of application for this residency programme,

a) Applicants must be employed by employers endorsed by Ministry of Health (MOH); and

b) Residents who wish to switch to this residency programme must have waited at least one year between resignation from his/her previous residency programme and application for this residency programme.

At the point of entry to this residency programme, residents must have fulfilled the following requirements:

c) Have completed local Internal Medicine Residency programme and attained the MRCP (UK) and/or Master of Medicine (Internal Medicine) (NUS) qualifications or equivalent. Potential residents without these qualifications will need to seek ratification from JCST before they can be considered for the programme; and

d) Have a valid Conditional or Full Registration with Singapore Medical Council (SMC).

Selection Procedures

Applicants must apply for the programme through the annual residency intake matching exercise conducted by Ministry of Health Holdings (MOHH).

Continuity plan: Selection should be conducted via a virtual platform in the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross institution movement is restricted.

Less Than Full Time Training

Less than full time training is not allowed. Exceptions may be granted by Specialist Accreditation Board (SAB) on a case-by-case basis.

Non-traditional Training Route

The programme should only consider the application for mid-stream entry to residency training by an International Medical Graduates (IMG) if he/she meets the following criteria:

a) He/she is an existing resident or specialist trainee in the United States, Australia, New Zealand, Canada, United Kingdom and Hong Kong, or in other centres/countries where training may be recognised by the Specialist Accreditation Board (SAB)

b) His/her years of training are assessed to be equivalent to the local training by JCST and/or SAB.

Applicants may enter residency training at the appropriate year of training as determined by the Programme Director and RAC. The latest point of entry into residency for these applicants is Year 1 of the senior residency phase.

Note: Entering at Year 1 of the senior residency phase by IMG in any of the IM-related programmes is regarded as 'mid-stream entry' because it requires the recognition of the overseas Junior Residency training.

Separation

The PD must verify residency training for all residents within 30 days from the point of notification for residents' separation/exit, including residents who did not complete the programme.

Duration of Specialty Training

The training duration must be 36 months for junior residency and 36 months for senior residency.

Maximum candidature: All residents must complete the training requirements, requisite examinations and obtain their exit certification from JCST not more than 36 months beyond the usual length (IM residency + Neurology) of their training programme. The total candidature for Neurology is 36 months Internal Medicine residency + 36 months Neurology residency + 36 months candidature.

Nomenclature: Neurology residents will be denoted by SR1, SR2 and SR3 according to their residency year of training.

"Make-up" Training

"Make-up" training must be arranged when residents:

- Exceed days of allowable leave of absence / duration away from training; or
- Fail to make satisfactory progress in training.

The duration of make-up training should be decided by Clinical Competency Committee (CCC) and should depend on the duration away from training and/or the time deemed necessary for remediation in areas of deficiency. The CCC should review residents' progress at the end of the "make-up" training period and decide if further training is needed.

Any shortfall in core training requirements must be made up by the stipulated training year and/or before completion of residency training.

Learning Outcomes: Entrustable Professional Activities (EPAs)

Residents must achieve level 5 of the following EPAs by the end of residency training:

	Title
EPA 1	Managing patients with neurological emergencies
EPA 2	Managing inpatients
EPA 3	Managing ambulatory patients
EPA 4	Leading an inpatient team to provide care to inpatients
EPA 5	Providing diagnostic and management inputs to other health professionals

Learning Outcomes: Core Competencies, Sub-competencies and Milestones

The programme must integrate the following competencies into the curriculum, and structure the curriculum to support resident attainment of these competencies in the local context.

Residents must demonstrate the following Core Competencies:

1) Patient Care and Procedural Skills

Residents must demonstrate the ability to:

- Gather essential and accurate information about the patient
- Counsel patients and family
- members
- Make informed diagnostic and therapeutic decisions
- Prescribe and perform essential medical procedures
- Provide effective, compassionate and appropriate health management, maintenance, and prevention guidance

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, they should be able to demonstrate patient care skills with non-routine, complicated patients and under increasingly challenging clinical settings. Residents should learn how to engage with compassion and communicate effectively with patients with regard to diagnosis, management, counselling and health education.

Residents should demonstrate the ability to:

- 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 patients & family
  - Exercising clinical reasoning & clinical judgement
- Interpret the results of common neurological tests, and contextualise this to patients
  - Includes neuroimaging, Electroencephalogram (EEG), Nerve Conduction Study (NCS)/ Electromyography (EMG), Ultrasound Carotids
- Perform common tests used in the evaluation of patients
  - Lumbar puncture, Nerve Conduction Study (NCS)/ Electromyography (EMG)

2) Medical Knowledge

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

3) System-based Practice

Residents must demonstrate the ability to:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty
- Incorporate considerations of cost awareness and risk/benefit analysis in patient care
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve\e patient care quality. This includes effective transitions of patient care and structured patient hand-off processes.
- Participate in identifying systems errors and in implementing potential systems solutions

The resident must appreciate that he is part of a larger system and be aware of the other interrelated 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 should:

- Work effectively in various healthcare 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.

4) Practice-based Learning and Improvement

Residents must demonstrate a commitment to lifelong learning.

Resident must demonstrate the ability to:

- Investigate and evaluate patient care practices
- Appraise and assimilate scientific evidence
- Improve the practice of medicine
- Identify and perform appropriate learning activities based on learning needs

5) Professionalism

Residents must demonstrate a commitment to professionalism and adherence to ethical principles including the SMC's Ethical Code and Ethical Guidelines (ECEG).

Residents must:

- Demonstrate professional conduct and accountability
- Demonstrate humanism and cultural proficiency
- Maintain emotional, physical and mental health, and pursue continual personal and professional growth
- Demonstrate an understanding of medical ethics and law

6) Interpersonal and Communication Skills

Residents must demonstrate ability to:

- Effectively exchange information with patients, their families and professional associates.
- Create and sustain a therapeutic relationship with patients and families.
- Work effectively as a member or leader of a health care team
- Maintain accurate medical records

Other Competency: Teaching and Supervisory Skills

Residents must demonstrate ability to:

- Teach others
- Supervise others

Programme must ensure that residents have the documented opportunity to teach juniors and medical students.

Residents are recommended to attend at least 1 course on Teaching and Supervisory Skills in their final residency year.

Learning Outcomes: Others

Clinical neurophysiology (EPAs in development)
Faculty development (EPAs in development)

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

Residents must attend Medical Ethics, Professionalism and Health Law course conducted by Singapore Medical Association (SMA).

Learning Curriculum

Residents must demonstrate competency in the following content areas:

1. Neuroscience and Applied Core Aspects
    - Neuroanatomy
    - Neurochemistry
    - Neuroepidemiology
    - Neurogenetics & molecular biology applied to neurosciences
    - Neuropathology
    - Neuropharmacology
    - Neurophysiology

2. Neurological Localisation

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

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
- Role of Neurosurgery and Orthopaedic Surgery in Neurology

The curriculum and detailed syllabus relevant for local practice must be made available in the Residency Programme Handbook and given to the residents at the start of residency.

The PD must provide clear goals and objectives for each component of clinical experience.

Learning Methods and Approaches: Scheduled Didactic and Classroom Sessions

The programme must provide regular formal teaching sessions and grant residents protected time to attend teaching.

Didactic Sessions	**Frequency**
Neuroradiology Round	Weekly
Neurology Grand Round	Weekly
Neurology Journal Club	Weekly
Neurology peer-review-learning (PRL)	Once every month
Mortality & Morbidity round	Once every month
Neurophysiology teaching	Modular or monthly
Subspecialties teaching	Modular or monthly

A minimum attendance of 70% of all above-described sessions is required.

Learning Methods and Approaches: Clinical Experiences

The programme must provide the training in both inpatient and outpatient settings to the Senior Residents over three years.

Residents should undergo the following mandatory rotations:

a) 30 months of Inpatient wards, Outpatient clinics, Neurodiagnostic Laboratory and Neurology Subspecialty Services
b) 6 months of Geriatric Medicine and/or General Medicine

SRs may be rotated to other (secondary) training sites for duration of up to 9 months during the 3-year program.

Electives

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

a) Neuro-Intensive Care (up to 3 months)
b) Other suitable optional postings include (not more than 2 months per posting):
    - Neurosurgery
    - Ophthalmology or otolaryngology
    - Paediatric neurology
    - Neuroradiology

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 resident, in consultation with the PD, should run supervised longitudinal care outpatient clinics with responsibility for neurology follow-ups as well as referrals.

When attending clinic sessions, resident should:

- Present and discuss all new cases with the Consultants
- Present and discuss all complex review cases with the Consultants

In the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross-institution movement is restricted face-to-face meetings should be conducted via online platforms where appropriate. The neurology caseload and case mix are largely similar across sites, and the nuances between sites should be addressed when these restrictions are lifted.

Learning Methods and Approaches: Scholarly/Teaching Activities

Residents must perform the following in scholarly activities:

No	**Name of activity**	**Minimum Requirements (e.g frequency, attendance etc)**
1	Case presentations with topic reviews	3 presentations over 36 months
2	Journal club	

Residents are encouraged to perform the following scholarly activities:

No	***Name of activity***	***Brief description: nature of activity, minimum number to be achieved, when it is attempted***
1.	*Clinical research project*	*Research project of trainees' interest any time during training; it can be a single long project or a series of small projects.*
2.	*Publication in peer-review*	*It can be a case report of interest or clinical significance, prospective studies of relevance to neurology, retrospective analyses or clinical observation reports.*

3.	*Conference abstract presentation*	*Trainees are encouraged to present one conference abstract at a local, regional or international conference.*
4.	*QI project*	*Residents are encouraged to embark on and complete a Quality Improvement project.*
5.	*Evidence based Medicine course*	*All residents are encouraged to attend a Evidence-based-medicine course & be able to critically review/appraise published literature for clinical practice and present during journal watch/club.*

In the event of a protracted outbreak, presentations for scholarly activities can be conducted on online platforms.

Learning Methods and Approaches: Documentation of Learning

Residents must log the following:

- Case Logs:
  i. Minimum 30 cases every 6 months.
  ii. Cases logged should reflect the range of cases managed. The records should include learning points and reflections about the cases.

- Procedure Logs: Minimum
  i. 20 Electroencephalogram (EEGs) every 12 months (averaged over 3 years)
  ii. 20 Nerve Conduction Study (NCS) and/or Electromyography (EMGs) every 12 months (averaged over 3 years).

Summative Assessments

	Summative assessments			
	Clinical, patient-facing, psychomotor skills etc.		Cognitive, written etc.	
SR3	Workplace assessments with CCC evaluation of training progression every 6 months.	6 monthly CCC panel decisions on suitability for progression based on workplace assessments	OSCE-ITA (9 stations) Station 1 – 8 (case scenarios), 10 minutes per station Station 9 (short case station), 12 minutes for this station	MRCP SCE in Neurology 200 MCQs, total 6 hours (Taken from SR1 onwards)
SR2			Nil	
SR1			Nil	

S/N	**Learning outcomes**	**Summative assessment components**		
		6 monthly CCC panel decisions	OSCE-ITA	MRCP SCE in Neurology (can be taken from SR1 onwards)
1	EPA 1: Managing patient with a Neurological Emergency	✓	✓	✓
2	EPA 2: Managing Inpatients.	✓	✓	✓
3	EPA 3: Managing Ambulatory Patients.	✓	✓	✓
4	EPA 4: Leading an Inpatient Team to provide care to inpatients	✓		
5	EPA 5: Providing Diagnostic and Management Input to other health professionals	✓		