PAEDIATRIC NEUROLOGY ASSOCIATION OF HONG KONG

PROPOSAL OF A PROGRAM ON SUBSPECIALTY TRAINING IN PAEDIATRIC NEUROLOGY IN HONG KONG

1 INTRODUCTION

Paediatric neurology has been practiced in Hong Kong for more than 30 years. It is recognized as a well established paediatric subspecialty in Hong Kong that is practiced by clinicians in public hospitals and in the private sector.

Paediatric neurologists look after children with conditions that have an origin in the nervous system. The scope of diseases that they see includes attention deficit – hyperactivity disorder, autism, cerebral palsy, developmental delay, epilepsy, neurobehavioral and neurodevelopmental disorders, neurometabolic diseases, neuromuscular diseases, learning disabilities, neoplasms of the nervous system and various inheritable nervous system disorders. Their service is necessarily overlapping and intertwined with subspecialists of other areas e.g. adult neurology, metabolic diseases, child development, ophthalmology, psychiatry and so on. Such is the case because of the multifaceted nature of these children's illnesses.

In the field of paediatric neurology a subspecialist is required to have a specific range of knowledge and skills. These include the performance and interpretation of specialized electrophysiological tests, use of specific assessment tools in neurological and developmental conditions, employment of specific therapeutic techniques and also the skill to work in a multidisciplinary setting with other clinical, para-clinical and community based professionals to provide holistic care for the children.

The nature of the neurological and developmental conditions is often chronic. These conditions require long term follow up and chronic therapies or drug treatment. Since the management involves high costs, the majority of neurological and developmental conditions are looked after by the government sponsored agency, namely the Hospital Authority and, to a lesser extent, the Department of Health. The training program is therefore designed to include a significant period of hospital-based training to allow maximum opportunity in the hands-on management of these patients. The program is geared toward the expertise needed in the service model in Hong Kong.

This proposal is set to delineate the structure and requirement of the training program for the accreditation of a Paediatric neurology subspecialist. It also stipulates the

syllabus of knowledge a specialized paediatrician that is required in the care of children with neurological and neurologically related developmental problems.

2 DEFINITION OF PAEDIATRIC NEUROLOGY

Paediatric neurology is the medical discipline devoted to normal and abnormal development of the central nervous system and peripheral neuromuscular systems from fetal life to adolescence and the transition into adulthood. It involves the diagnosis, assessment, treatment, habilitation – rehabilitation of diseases of these systems and the comprehensive management of the accompanying disabilities, impairment, limitation and participation restrictions.

3 OBJECTIVES OF THE TRAINING PROGRAM

(1) To provide broad training and in-depth experience for trainees to acquire the competence of a subspecialist in paediatric neurology to ensure high level of clinical skills and procedural competence that is appropriate for practice of the subspecialty at a secondary, tertiary and quaternary level

(2) To promote critical thinking, self learning and a commitment to continued medical education

(3) To enhance scientific knowledge and lay the groundwork for research in paediatric neurology and related problems

(4) To develop communication skills based on empathy and sensitivity so as to build long term professional relationships with children and families affected by neurological or neurodevelopmental conditions.

(5) To promote the ability of leading, liaising and coordinating work with other professionals who serve children and families affected by neurological conditions.

(6) To promote advocacy and policy development related to disorders affecting the nervous system of children.

4 ENTRY REQUIREMENTS

Entry into the subspecialty training should be after the attainment of MRCPCH or an equivalent qualification as recognized by the Hong Kong College of Paediatricians and the completion of basic paediatric training plus a minimum of two years of higher training.

There is no alternative entry to the training program. This program is mandated to be a continuation of basic and higher paediatric training. A trainee entering the program is expected to be trained in general paediatrics and neonatology and is equipped with the basic knowledge in paediatric neurology that is commensurate with the level of training one has undertaken.

5 STRUCTURE

(1) The subspecialty training in paediatric neurology is made up of no less than three years of supervised accredited training.

(2) The trainee is required to go through a minimum of two training centres. Training at a paediatric neurology or neurodevelopmental paediatric centre overseas for a period of 6 months is highly recommended. The training offered in the different centres should be complementary.

(3) The training should consists of the following **four** mandatory modules:

Module A: Hospital based Paediatric neurology Training

A period of no less than 24 months training in a hospital setting is required.

This period is dedicated to the acquisition of experience and skills in looking after acute neurological problems both in children and neonates. It should also involve training in a regular out-patient setting where children are managed and followed up at a regular interval on top of experience gained from working at an in-patient environment. Training at in-patient and out-patient settings should be conducted concurrently with equal emphasis. This is also the period when specialized skills in electrophysiological tests, neurological investigations and treatment measures should be learned.

At least one year of the training in this module shall be conducted in a hospital that provides paediatric and neonatal intensive care service and emergency room service.

Module B: Adult Neurology Training

A period of no less than 3 months training in hospital based adult neurology training is required.

This period of training shall consist of supervised clinical work in a hospital accredited for subspecialty training in adult neurology. Such clinical work can include ward rounds, subspecialty clinics, clinical consultations, academic meetings and presentations. Due to practical consideration of manpower arrangements, full time work at a Medical Department for this period of training is not required.

Module C: Neuro-rehabilitation Training

A full time supervised training in an institution or hospital dedicated to the rehabilitation – habilitation of children with neurological conditions is required. The duration of this module shall be no less than 3 months.

In this module the trainee should acquire knowledge regarding the rehabilitation of children with disabilities. The trainee should learn about different modalities of treatment, the relevant assessment tools and also the organization of service provision that is prevailing in Hong Kong. A trainee is also expected to gain experience in working with different professionals in the hospitals and the community.

This part of training need not be conducted in an acute hospital.

Module D: Neuro-developmental Paediatrics Training

A full time supervised training in an institution or hospital dedicated to the neurologically related developmental conditions of children is required. The duration of this module shall be no less than 3 months.

In this module a trainee is expected to learn in depth the different assessment tools of general childhood development and also the evaluation and management specific developmental conditions in children. They are also expected to familiarize themselves with the interface between medical, health and education systems in Hong Kong. A trainee is expected to further develop his skills in working in an interdisciplinary environment.

This part of training need not be conducted in an acute hospital.

(4) In the event that a trainee completes the four mandatory training modules before his/her successful passage through the exit assessment, he / she is allowed to engage in an elective training no longer than 6 months in other related fields that are listed, but not limited to, the following, subject to approval by the subspecialty Board and Training Director:

Child psychiatry
Clinical genetics
Clinical or laboratory research related to paediatric neurology and

neurodevelopmental paediatrics
Community Paediatrics
Neurometabolic diseases
Neuro-ophthalmology
Neuropathology
Neurosurgery
Paediatric orthopaedics

6 SYLLABUS

(A) Knowledge

Trainees should acquire experience by managing both in acute and outpatient situations of the following conditions in paediatric neurology and developmental paediatrics.

1. Autistic spectrum disorder
2. Cerebral palsy
3. Cerebrovascular diseases in children
4. Congenital malformations of the nervous system
5. Demyelinating diseases
6. Developmental delay and other cognitive function disorders
7. Epilepsy
8. Fetal neurology
9. Genetic disorders: including chromosomal abnormality, single gene and multiple gene diseases, syndromes with neurological and developmental impairments.
10. Habilitation and rehabilitation
11. Head injury: including inflicted brain injuries
12. Headaches and Migraine
13. Hearing impairment
14. Infections of the nervous system
15. Learning disabilities (including specific learning disabilities)
16. Movement disorders
17. Neonatal neurology
18. Neoplasms of the nervous system
19. Neurobehavioral disorders, including attention deficit-hyperactivity disorders, conduct disorder, opposition-defiant disorder, obsessive-compulsive disorders
20. Neurodegenerative diseases
21. Neurological emergencies e.g. coma, acute encephalopathy, status epilepticus
22. Neurological manifestations of systemic illnesses
23. Neurometabolic diseases: including lysosomal storage diseases, perioxismal diseases and mitochondrial diseases and others
24. Neuromuscular diseases: including muscular dystrophies, congenital myopathies, Spinal muscular atrophy, myasthenia gravis and related disorders
25. Neuro-ophthalmology
26. Peripheral nervous system diseases
27. Rehabilitation of conditions related to paediatric neurology

28. Speech disorders
29. Visual impairment
30. Other related neurological and neuroscience topics

Trainees should acquire sound knowledge regarding the early development, including embryology of the brain, normal childhood developments in motor, speech, social and cognitive realms, their normal variations and warning signs of aberrations and abnormality.

Trainees should also be able to understand the interconnection between neurological and neurodevelopmental paediatrics with other specialties in paediatrics and to formulate interdisciplinary management plans for children who require the care of other subspecialties.

(B) Skills

The following skill and competence are expected of a trainee

1. Comprehensive history taking
2. Neurological examination of children of all ages
3. Developmental assessment of children of all ages (including testing of vision and hearing)
4. The use of relevant diagnostic tests and their interpretation
5. Acute and long term management of both acute and chronic neurological conditions
6. Lumbar puncture
7. Muscle biopsy
8. Nerve conduction study
9. Electromyography
10. Electroencephalography (reporting and interpretation)
11. Evoked potential studies
12. Neuro-radiology (interpretation): including brain sonography for newborns and infants
13. Botulinum toxin injection

(C) Additional experience in the following is desirable, subject to availability. The training in the following areas can be gained by regular (e.g. weekly) clinic sessions with the relevant specialists and can be integrated into three training modules:

1. Audiology

2. Child psychiatry
3. Paediatric orthopaedics
4. Neurometabolic diseases
5. Neuro-ophthalmology
6. Neuropathology
7. Neurosurgery
8. Intraoperative electrophysiological monitoring (including monitoring for dorsal rhizotomy and evoked potential monitoring)
9. Epilepsy surgery
10. Clinical or laboratory research
11. Clinical Genetics
12. Speech and language pathology

(D) Attitudes and Core competence

1. Strong clinical skills in examining and assessing children with neurological and neurodevelopmental conditions, with the ability of differentiating normal variation and identifying abnormalities.
2. Sensitivity and empathy in communicating with children and their families.
3. Leadership and coordination skills while working with other professionals
4. Be a steadfast advocate for the welfare of children

7 INSTITUTIONAL REQUIREMENTS

The requirements for a local hospital or institution to be accredited as a training centre are as follows:

1. The centre that provides training in hospital based paediatric neurology (Training Module A) should be a hospital or a training centre cluster made up of a group of hospitals where the trainee would dedicate at least 50% of work in Paediatric neurology. It should contain the following facilities on-site:
   a. General paediatric wards with regular admissions and consultations for patients with neurological/neurodevelopmental conditions.
   b. Regular outpatient neurology service that is dedicated to neurological/ neurodevelopmental patients and conducted under supervision.
   c. Collaboration with paraclinical and non-clinical supporting services including physiotherapy and occupational therapy, clinical psychologist, social worker etc.
   d. Laboratory and diagnostic facilities: electrophysiology, radiology, neuropathology, microbiology and clinical chemistry services
   e. Regular quality control procedures, including audit and autopsy
   f. High quality medical records with easy accessibility
   g. Affiliation with rehabilitation facilities
   h. Structured educational program, including grand round, journal clubs and presentations in neurology
   i. Paediatric and neonatal intensive care facilities.

   A hospital that fulfils the above criteria from (a) to (i) shall be accredited to provide a training of no more than 30 months within the 3 years of subspecialty training.

   A hospital within a training centre cluster that fulfils only (a) to (h), i.e. a hospital without either paediatric or neonatal intensive care facilities, shall be accredited to provide a training of no more than 18 months within the 3 years of subspecialty training in Paediatric neurology.

2. The centre that provides training in Adult Neurology (Training module B) shall be a hospital that is accredited by the Hong Kong College of Physicians to provide training in adult neurology. The training should be led by accredited trainers listed by the Hong Kong College of Physicians. In general the hospital

should provide the following facilities on-site:

a. Admission wards with regular admissions and consultations for patients with neurological conditions.
b. Regular outpatient neurology service that is dedicated to neurological patients and conducted under supervision.
c. Collaboration with paraclinical and non-clinical supporting services including physiotherapy and occupational therapy, clinical psychologist, social worker etc.
d. Laboratory and diagnostic facilities: electrophysiology, radiology, neuropathology, microbiology and clinical chemistry services
e. Regular quality control procedures, including audit and autopsy
f. High quality medical records with easy accessibility
g. Structured educational program, including grand round, journal clubs and presentations in neurology
h. Intensive care facilities.

3. The centre that provides training in Neuro-rehabilitation training (Training Module C) should be a hospital or institution where the trainee would devote his work to rehabilitation of children and adolescents with neurological conditions. The centre should contain the following facilities on-site:
   a. Regular neuro-rehabilitation service that is dedicated to rehabilitation of children with neurological and developmental disabilities. Such service should be conducted under supervision.
   b. Collaboration with paraclinical and non-clinical supporting services including physiotherapy and occupational therapy, prosthetics and orthotics service, clinical psychologist, social worker etc.
   c. Laboratory and diagnostic facilities: electrophysiology and radiology facilities are required.
   d. Regular audit procedures on clinical outcomes.
   e. High quality medical records with easy accessibility
   f. Structured educational program, including grand round, journal clubs and presentations in neuro-rehabilitation.

4. The centre that provides training in Neuro-developmental paediatrics training (Training Module D) should be a hospital or institution where the trainee would devote his work on the assessment and management of children and adolescents with neuro-developmental conditions. The centre should contain

the following facilities on-site:

a. Regular neuro-developmental paediatrics service that is dedicated to assessment and management of children with neurological and developmental disabilities. Such service should be conducted under supervision.
b. Collaboration with paraclinical and non-clinical supporting services including child psychiatrists, clinical psychologist, speech therapists, social worker etc.
c. Regular audit procedures on clinical outcomes.
d. High quality medical records with easy accessibility
e. Affiliation with rehabilitation facilities
f. Structured educational program, including clinical meetings, journal clubs and presentations in developmental paediatrics.

The trainer: trainee ratio should not exceed 1:2 in all of the training centres listed above. Should two or more hospitals liaise together to form a training centre cluster, the training can only be accredited if the trainee is physically working in the hospital or institution with the specified facilities e.g. paediatric ICU or neonatal ICU. There shall be a minimum of two trainers in one training centre or training centre cluster.

If a trainee elects to receive training from a training centre overseas, this centre has to be accredited by the subspecialty Board to have a standard that is broadly equivalent to those required for local centre.

8 EXAMINATION AND ASSESSMENT

A trainee in this program is expected to keep log of the activities and experience by means of a log book. The log book shall be submitted to review by the Subspecialty Trainer at the institution the trainee is attending and also by the Subspecialty Board and Director at regular intervals. At the review the progress of the trainee will be scrutinized by the trainer and the Board. The frequency of such review shall be at least once every year.

At the end of the three-year training trainees are required to satisfy the Board Members that they have acquired the knowledge and skills to qualify as a subspecialist in paediatric neurology.

The assessment, which will be held at appropriate frequency as the Subspecialty Board determines, shall be in the form of

1. One original dissertation submitted for appraisal. The dissertation should preferably be accepted for publication by peer reviewed journal, either local or overseas. The trainee should be prepared to discuss the dissertation in detail during an oral examination.
2. An examination, which can be in the format of oral, written, OSCE or clinical examination, will also be conducted on different topics in paediatric neurology, neuro-rehabilitation and neurodevelopmental paediatrics. The format of the examination will be determined by the Subspecialty Board one year before the examination.

A candidate will be considered to have passed the exit assessment only if he/she passes both of its parts.

A candidate who has failed the exit assessment shall continue to pursue training as stipulated by section 5 ("Structure") and section 6 ("Syllabus") and as directed by the Subspecialty Training Director and the Subspecialty Board until the candidate successfully passes subsequent exit assessment. The candidate need only to re-sit the part of exit assessment he/she has failed in the previous assessment.

9 SUBSPECIALTY BOARD, TRAINERS AND TRAINING DIRECTORS

The Subspecialty Board shall be formed by six fellows in paediatric neurology from the universities, Hospital Authority and private sector as appropriate, including one fellow who is appointed by the Council of the College. The Board Chairman shall be elected by the Subspecialty Board and be appointed by the Council of the College.

The Subspecialty Board shall be responsible for

(1) Setting the accreditation guidelines for the training program in paediatric neurology
(2) Accrediting the subspecialty training program
(3) Setting the criteria for accreditation of training modules within the training program
(4) Accrediting local and overseas institutions for the duration and type of training allowed by the Subspecialty Board
(5) Accrediting and appointing Subspecialty Training Program Directors and Subspecialty Trainers
(6) Ensuring a high standard of practice in paediatric neurology that is comparable to that in overseas centres by arranging peer review of the paediatric neurology training program
(7) Inviting overseas paediatric neurology specialist to be referees in the training program and the examinations and assessments
(8) Appointing examiners and organizing Subspecialty Board Examinations
(9) The administration, organization and validation of continuing medical education which must be fulfilled by all fellows in paediatric neurology in addition to the CME requirement for general paediatrics of the Hong Kong College of Paediatricians.

The Subspecialty Training Director is appointed by the Subspecialty Board to overlook the training progress of trainees. One Director shall be responsible for no more than two trainees at any one time.

The Subspecialty Training Director shall be responsible for

(1) Monitoring the progress of training of the trainee to ensure fulfillment of the requirement of the program
(2) Reviewing the progress with trainee and make appropriate arrangements and recommendations regarding the training arrangements of the trainee
(3) Ensuring the completion of the training of a trainee within a reasonable time

frame.

(4) Reporting the progress of training of the trainee to the Subspecialty Board

The Subspecialty Trainers are appointed by the Subspecialty Board to overlook the training progress of trainees. One Trainer shall be responsible for no more than two trainees at any one time.

The Subspecialty Trainer shall be responsible for

(1) Providing day-to-day training and supervision to the trainee
(2) Reviewing the progress of the trainee regularly
(3) Reporting the progress of training of the trainee to the Subspecialty Director and the Board regularly

Proposal endorsed by the Council of the Paediatric Neurology Association of Hong Kong
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