Asian Epilepsy Academy (ASEPA) & ASEAN Neurological Association (ASNA)

EEG Certification Examination
EEG Certification Examination

• Aims
  – To set and improve the standard of practice of Electroencephalography (EEG) in the Asian Oceanian region
Conduct of EEG Examination

• Part 1 or Part 2
  – 1 to 4 times a year
  – During regional neurological or epilepsy conferences, e.g.
    • Biennial Conventions of ASEAN Neurological Association (ASNA)
    • Biennial Asian Oceanian Epilepsy Congresses (AOECs)
  – During ASEPA Teaching Courses / Workshops
  – During annual conference of ILAE Chapter, e.g.
    • TES’ annual epilepsy conferences
  – Any time of the year in any city or country when there are enough numbers of candidates
Certification Examination

Part 1: Written → Part 2: Oral
Who Can Apply For Part 1 Exam?

- Practicing Neurologists or Psychiatrists in their own countries / regions

- Neurology, Epilepsy or EEG Trainees / Residents / Fellows
  - Need to show proof that they have had adequate training and experience in EEG interpretation and reporting

- Experienced EEG technologists, especially those involved in EEG reporting and/or interpretation in their own EEG laboratories
Before Applying For Part 1 Exam

• The Board expects that training in EEG will include broad exposure to the scientific basis of clinical neurophysiology as well as relevant aspects of technique and instrumentation.

• All candidates are expected to have extensive experience interpreting EEGs, in various age groups and in a wide range of clinical disorders.
Part 1 Examination

• Written
• Answer **150 Multiple Choice Questions** in **3** hours
• 3 Sections (50 questions each)
  1. EEG recording techniques and instrumentation
  2. Normal EEGs
  3. Abnormal EEGs
• **Each question will have 5 choices of which only one is correct**
• No minus mark for wrong answer
Topics Asked In Written Examination

- **Neuroanatomy and Neurophysiology**
  - Anatomy of neural generation
  - Mechanisms of EEG generation
  - Pathophysiology of abnormal waveforms
  - Basic mechanisms of epileptogenesis

- **EEG Recording Techniques**
  - Head measurement and marking
  - Electrode position nomenclature (International 10-20 & 10-10 System)
  - Electrodes: properties and application techniques
  - Impedance measurements
  - Activation procedures such as hyperventilation, sleep deprivation, photic stimulation

- **Instrumentation, Polarity and Localization**
  - Basic electricity and electronics
  - Amplifiers and their characteristics
  - Calibration
  - Waveform measurements (voltage, frequency, and duration)
  - Filters, sensitivity and frequency response curves
  - Localization and polarity
  - Electrical safety
  - Principles of EEG digitalization including analog-to-digital conversion (vertical and horizontal resolution), sampling rate (aliasing and Nyquist frequency), screen or monitor display (sensitivity scale and pixel resolution), etc
  - Recording reference (electrode site, average reference and Laplacian reference)
  - Montages and reformatting

- **Artefacts**
  - All physiological and non-physiological artefacts including artefacts caused by chewing, sweating, eye movements, ECG, pulse motion, movement of head/body, electrode pops or movements, electrical fields from electrical devices (TV, telephones), respirator-induced movements, intravenous drips/drip pumps, etc
Topics Asked In Written Examination

• **EEG Interpretation and Reporting**
  – Principles of interpretation
  – General classification of abnormal EEGs
  – Elements of EEG reports
  – How to make good reports

• **Normal EEG in Adult & Elderly**
  – Normal awake and normal sleep patterns including alpha, beta, theta, delta waves, mu, lumbda waves, POST, Vertex sharp transients, spindles, K-complex
  – Normal responses to hyperventilation and photic stimulation
  – Changes in EEG in the elderly

• **Normal EEG in Infants and Children**
  – Normal patterns of various ages from neonates up to adolescents

• **Normal Variants & Uncommon Patterns of Doubtful Significance**
  – Small sharp spike / benign epileptiform transients of sleep
  – Wicket spikes
  – Psychomotor variants
  – 14&6 positive spike
  – Breech rhythm
  – Sub-clinical rhythmic EEG discharges in adults (SREDA)
  – Alpha variants,
  – Phantom spike-waves patterns
Topics Asked In Written Examination

• Non-Epileptiform Patterns
  – Slow waves
  – Triphasic waves
  – Generalized periodic complexes/patterns
  – Periodic lateralized epileptiform discharges (PLEDs)
  – Coma and stupor

• Epileptiform Patterns
  – Definition of epileptiform patterns
  – Types & recognition of various inter-ictal epileptiform patterns such as sharp waves, spikes, polyspikes, 3Hz spike & wave complexes, 4-6Hz spike & wave complexes, slow spike & wave complexes, photo-paroxysmal responses, hypsarrhythmia
  – Ictal patterns
  – How to differentiate interictal from ictal patterns
  – EEG patterns in specific epilepsy syndrome such as focal (e.g. Benign Rolandic Epilepsy, Benign Epilepsy of Childhood with Occipital Paroxysms) and generalized (West Syndrome, Lennox-Gastaut Syndrome, Absence Epilepsy, Juvenile Myoclonic Epilepsy, etc) epilepsy syndromes
  – EEG in status epilepticus

• Long-term EEG Monitoring
  – Types of long-term EEG recording
  – Indications and limitation of ambulatory and video-EEG monitoring
  – Various semiology and their localizing & lateralizing values

• Use of EEG in the Management of Seizure and Non-Seizure Disorders
  – Strength and limitations of EEG
  – Indications for ordering EEG
  – Yields of finding abnormality (e.g. epileptiform patterns) in patient with & without seizure disorders
  – Use of long-term EEG monitoring in patients with refractory epilepsy
  – Use of EEG in treatment & prognosis of epilepsy
  – Use of EEG in non-seizure disorders (e.g. CVA; metabolic & toxic encephalopathies; dementia; brain tumors; head trauma; headaches, etc)
Eligibility for Part 2

• **Must Pass Part 1**
  – Pass at least 2 of the 3 sections
    • Passing marks for each section is 50%
  – Average mark for 3 Sections must be $\geq 50\%$
Asian Epilepsy Academy (ASEPA)  
and  
ASEAN Neurological Association (ASNA)

EEG Certification Examination

This is to certify that

Dr Kwan Shang Yeong

has satisfied the requirement of the ASEPA-ASNA EEG Certification Examination Board and
is hereby certified as a qualified

Electroencephalographer

2017

__________________________
Dr John Dunne
Asian Epilepsy Academy

__________________________
Dr Shih-Hui LIM
ASEAN Neurological Association
Direct your queries to:

Dr Shih-Hui LIM
Chairman, ASEPA EEG Examination Board

lim.shih.hui@sgh.com.sg