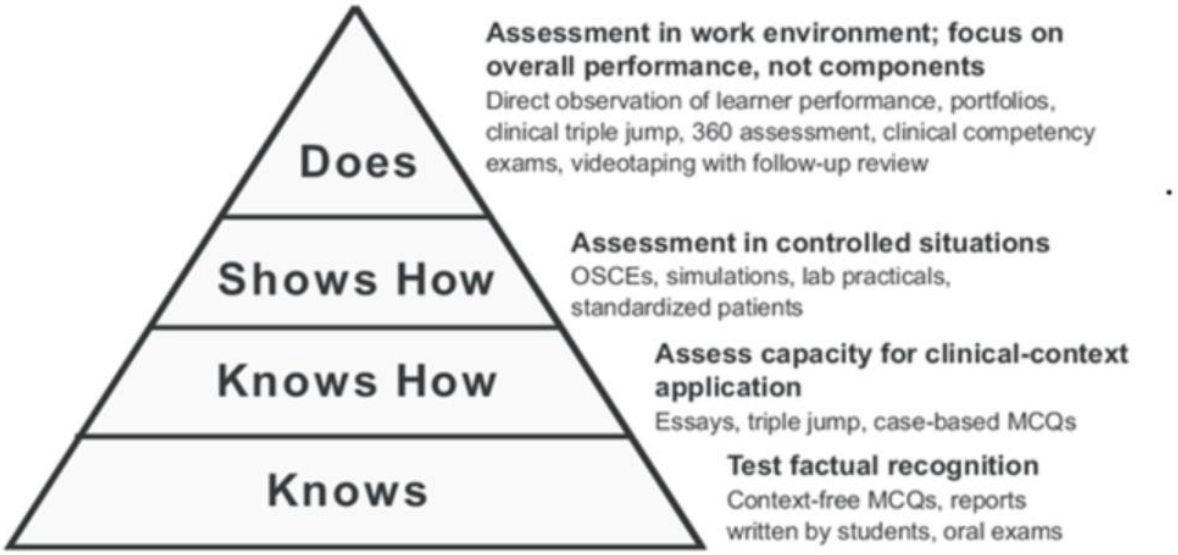
EPNS Board Examination on Paediatric Neurology Knowledge

The board examination focuses on knowledge and clinical reasoning as depicted on the two lowest levels of the Millers Pyramide. Clinical skills and professional attitudes (top levels of Millers pyramid) may be assessed on a national level.



Miller's Pyramid of Professional Competence with examples of assessment techniques used in medical education
Source: Reproduced with permission from Miller GE. Assessment of clinical skills/competence/performance. Acad Med 1990;9:63–7.

The examination is partly aligned with the EPNS teaching courses, additionally the candidates have to accomplish their knowledge by self-directed learning or other courses (as Distant learning course from BPNA).

The learning objective list is for trainees in Paediatric Neurology, who intend to pass the EPNS Board Examination for Paediatric Neurology.

The catalogue is based on the syllabus of the European Paediatric Neurology Society and the learning objective catalogues from Great Britain, Netherlands, Switzerland, Australia and Canada. The learning objective catalogue was discussed and accepted by the committee of national advisors of the EPNS and the Board of EPNS.

The examination is uniformly done in English as a multiple-choice test.

Learning Objectives Catalogue

According to the different themes, the knowledge should comprise epidemiology, aetiology, pathogenesis, pathology, clinical features (including localisation and age dependant appearance), investigation, differential diagnosis, management (including transition) and prognosis.

Domaines:

1. Basic knowledge
2. Neonatal Neurology
3. Developmental Neurology, learning disorders
4. Malformations/Neuroimaging
5. Epileptology/paroxysmal disorders
6. Movement disorders
7. Neuromuscular disorders
8. Neuroimmunology/Infections
9. Neurometabolic disorders/ neurodegenerative disorders/ Neurogenetics
10. Cerebrovascualr problems
11. Neurooncology
12. Non neurooncological neurosurgical problems
13. Neurocutaneous problems should go after neurooncology
14. Neuroophthalmology
15. Sleep related problems
16. Behavioural and psychiatric disorders
17. Headache
18. Brain trauma and neurosurgical problems
19. End of life care, decision of change of care, brain death
20. Medically unexplained neurological disorders
21. Aspects of Adult Neurology

Information on chapters referring to EPNS guidelines

1. Basic knowledge
   - 1.1. *Neuroanatomy and neuroimaging* — chapter 2
   - 1.2. *Neurophysiology,* — chapter 1
   - 1,3, *Neurogenetics, nervous system development* — chapter 3
   - 1.4. Normal psychomotor development — chapter 4
   - 1.5 *Neurological examination and clinical localisation* — chapter 21
   - *1.6* Pharmakotherapy working mechanism side effects dosing — allocated in special chapters

2. Acute Neurology:
   - 2.1. *Seizures including status epilepticus* — chapter 9
   - 2.2. *Altered state of consciousness/acute encephalopathy* including brain death — chapter 19
   - 2.3 *Acute headache* — chapter 16
   - 2.4 *Raised Intracranial pressure* — chapter 14
   - *2.5 Acute ophthalmological symptoms and signs* — chapter 17
   - *2.6 Acute facial palsy*
   - *2.7 Acute ataxia/acute movement disorders including status dystonicus* — chapter 7
   - *2.8 Acute weakness (as myositis, GB, myelitis, cross sectional symptoms)* chapter 8
   - *2.9. Acute hemiparesis* — chapter 10
   - *2.10 Head trauma, spinal trauma and peripheral nerve lesions (including plexus) child abuse* — chapter 5

3. Neonatal Neurology — chapter 6
   - 3.1. Pregnancy related problems
   - 3.1.1 Prenatal infections
   - 3.1.2 Maternal problems (as diabetes, eclampsia)
   - 3.1.3. Prenatal exposure to toxic agents and drugs
   - 3.1.4 Small for gestational age
   - 3.1.5 Pregnancy problems (as oligo/polyhydramnion)
   - 3.1.6 Prenatal consultations / counselling
   - 3.2 Neonatal problems
   - 3.2.1 Problems/disorders of prematurity
   - 3.2.2 *Hypoxic ischaemic encephalopathy*
   - 3.2.3 *Neonatal seizures*
   - 3.2.4 *Neonatal stroke*
   - 3.2.5 *Neonatal meningitis/infections*
   - 3.2.6 Plexus palsy
   - 3.2.7 *Floppy infant*
   - 3.2.8 inborn errors of metabolism
   - 3.2.9 *Cerebral malformations and dysmorphic syndromes* including congenital hydrocephalus and myelomeningocele

4. Developmental Neurology chapter 4
   - 4.1. Abnormalities of head
   - 4.1.1 *Microcephaly / Macrocephaly and CSF circulation problems*
   - 4.1.2. Plagiocephalus and Torticollis
   - 4.1.3 Craniosynostosis
   - 4.2. Developmental problems
   - 4.2.1 *Developmental delay and its aetiology*
   - 4.2.2. *Developmental regression and its aetiology*
   - 4.3. *Cerebral palsy (aetiology , problems and treatment)*
   - 4.4 *Behavioural problems as ADHD, Autism*

5. Malformation and Neuroimaging chapter 2
   - 5.1. Normal development and findings
     - 4.1.1. Normal structural development (Anlage, Proliferation, migration, maturation)
     - 4.1.2 Normal anatomy in neuroimaging
   - 5.2. Malformation of head brain and spine
   - 5.2.1 *Microcephaly, macrocephaly,* craniosynostosis
   - 5.2.2 problems of Anlage
     (as holoprosencephaly, corpus callosum abnormalities, Dandy Walker problems)
   - 5.2.3 Proliferation and migrations abnormalities
     (as schizencephaly,lissencephaly, polymicrogyria)
   - 5.2.4 Spinal malformations
     (as MMC, spinal dysgraphia)

6. Epileptology and non epileptic paroxysmal disorders chapter 6
   - 6.1 Epileptic disorders
   - 6.1.1. Normal EEG findings age dependant and typical pathologies goes within question
   - 6.1.2 *Neonatal seizures*
   - 6.1.3. *Infantile spasm*
   - 6.1.4. *Childhood epileptic syndromes*
     (as Watanabe - Dravet, Lennox Gastaut syndrome, absence seizures, BECTS, CSWS)
   - 6.1.5. Adolescent epileptic seizures
     (as juvenile myoclonus epilepsy, Grand Mal epilepsy)
   - 6.1.6 Genetic epileptic Encephalopathies
   - 6.1.7 Structural and symptomatic epilepsies
   - 6.1.8 *Status epilepticus convulsive and non convulsive*
   - 6.1.9 Febrile convulsions
   - 6.1.10 Treatment of epilepsy
   - 6.2. Non epileptic paroxysmal disorders
   - 6.2.1 Benign neonatal sleep myoclonus
   - 6.2.2 Breath holding spells
   - 6.2.3 Hyperekplexia
   - 6.2.4 Benign paroxysmal vertigo
   - 6.2.5 Tics and stereotypies

6.2.6 Syncopal attacks (as vasovagal, reflex anoxic, cardiac, vertigo)
6.2.7 Paroxysmal dyskinesia
6.2.8 Pseudo epileptic attacks (as functional)
6.2.9 Sleep related events as pavor nocturnus

7. Movement disorders see also domaine 9 chapter 7
7.1. Pattern recognition included in other question
7.1.1 *Clinical pictures as spasticity, ataxia, dystonia, myoclonus, athetosis, chorea*
7.1.2 Anatomical attribution
as cerebral, basal ganglia, cerebellar, vestibular, proprioception
7.2. Movement disorders
7.2.1 Primarily hyperkinetic causes
as chorea minor , choreoathethotic cerebral palsy, metabolic and genetic problems
7.2.2 Primarily hypokinetic causes
as Huttingtons disease, Parkinsonismus, spastic syndromes
7.2.3 Primarily ataxic causes
as Louis Barr syndrome, cerebellar malformations
7.2.4 *Tic problems*
7.2.5 Tremors

8. Neuromuscular disorders chapter 8
8.1. *Floppy infant and differential diagnosis*
8.2. Anterior horn cells diseases
8.2.1 *Hereditary as SMA*
8.2.2 Inflammatory as acute flaccid poliradiculatis
8.3. Peripheral nerve problems
8.3.1 hereditary as Charcot Marie Tooth
8.3.2 *inflammatory as Guillain Barré,* CIDP
8.4. neuromuscular junctions as myasthenic syndromes
8.5 muscle disease
8.5.1 *Muscular dystrophies as Duchenne , Steinert*
8.5.2 Structural myopathies as Nemaline Rode
8.5.3 Myotonic Syndromes as Thompson and Becker
8.5.3 Metabolic myopathies as Pompe
8.5.4 Inflammatory myopathies as myositis

9. Neuroinfections / Neuroimmunology/ chapter 9

9.1 Neuroinfections
9.1.1 *Meningitis and Encephalitis including Neuroboreliosis*
9.1.2 Brain and spinal abscess
9.2 Neuroimmunological problems
9.2.1 *Multiple sclerosis*

9.2.2 *MOG and Aquaporin related disorders*
as ADEM, Optic neuritis, Myelitis
9.2.3 Polyradiculitis as Guillain Barré
9.2.4 *Autoimmune encephalitis as NMDA encephalitis*
9.2.5 *Para- and postinfectious ataxia*
9.2.6 *Myoclonus-Opsoclonu*s (as in neuroblastoma or parainfectious)
9.2.7 paraneoblstic syndromes

10. Neurometabolic disorders/ neurodegenerative disorders/ Neurogenetics chapter 10

10.1 *White matter problems*
as metachromatic leucodystrophy, Krabbe, Vanishing white matter disease
10.2 *Grey matter disease*
as NCL
10.3 Basal ganglia disorders as M. Wilson, Chorea Huntington,
10.4 Encephalomyopathies as mitochondrial, peroxysomal, glycolisation disorders, glucosetransportation
10.5. Disorders of system degenerations
as Friedreichs Ataxia, hereditary spastic paraparesis
10.x *Neurotransmittor problems*
10.6. *Well defined neurogenetic disorders*
as Fragile X syndrome, Angelmann Syndrome, Rett Syndrom
10.7. *Neurocutaneous syndromes as NF I, TS, Sturge Weber Syndrome*

11. Cerebrovascular problems chapter 11
11.1. *Arterial ischaemic stroke*
as by arteriopathies (as Focal cerebral arteriopathy, Moyamoya, arterial dissection), thromboembolic , sickle cell
events, vasculitis
11.2 *Haemorrhagic stroke* including subarachnoid bleed
as by arteriovenous malformation, fistulas, cavernomas, aneurysma
11.3 *Sinuous venous thrombosis*
11.4 *Stroke mimics as migraine, alternating hemiplegia*

12. Neuroncology chapter 12
12.1 Infratentorial tumours as pylocystic astrocytoma, medulloblastoma, ependymoma
12.2 Brainstem tumours as brain stem glioma
12.3 Craniopharyngeoma
12.4 Supratentorial tumours as DNET
12.5 Spinal tumours
12.6 Neuroblastoma and Opso Clonus Myoclonus
12,7 Neurological Complication of treatment of malignancies

13. Non neurooncological neurosurgical problems chapter 13

13.1 Spinal malformations as dysraphia, spinal infarctions, spinal tumors
13.2 Spinal infarctions
13.3. Spinal tumors
13.4 Hydrocephalus and shunt problems

14. Neurocutaneous problems chapter 14

14.1.Neurofibromatosis
14.2.Tuberous sclerosis
14.3.Sturge Weber
14.4 other neurocutaneous problems

15. Neuroophthalmology chapter 15
15.1. Pupil anomalies
15.2. Ptosis, Iris and conjunctival problems
15.3. *Oculomotor problems as* cranial nerve palsies and supranuclear problems
15.4 Retinal problems
15.5 *Optic nerve problems*
15.6 Central vision problems

16. Sleep related problems chapter 16
16.1 Knowledge on physiological pattern of sleep and related problems (as rhythmic problems)
16.2 obstructive and central sleep apnoeas
16.3 Narcolepsy

16.4. *Pavor nocturna, night terrors, parasomnia*
16.5. Insomnia
16.6. Sleep related neurological disorders
as frontal lobe epilepsy, BECTs , Panayotopolous syndrom
as Undine syndrome

17. Psychiatric and behavioural problems chapter 4
17.1 *ADHD and related problems*
17.2 Neurological aspects of *Autismus spectrum disorders*
17.3 Tic problems
17.4. Complex motor stereotypies
17.5. Functional and psychosomatic neurological disorders
as presenting with gait problems, pseudoparesis
17.6 *neurological causes of common behavioural problems*

18. Headache chapter 17

18. 1 *Migraine*
18.2 Migraine equivalents in young children
18.3. Tension type
18.4. Dangerous headaches *into other question*

19. Brain trauma and neurosurgical problems chapter 18
see guidelines

20. End of life care, decisions of change of care, brain death chapter 19
20.1 Diagnosis of brain death
20.2. Prognostic factors in acute encephalopathy
20.3. Technical support in prognosis
see also guidelines

21. Medically unexplained neurological disorders chapter 20
see guidelines

22, Aspects of Adult Neurology chapter 21
22.1. Localisation by clinical examination
22.2. Neurological problems in adult life occurring also in children

Version of 15.11.2021 adjusted to guidelines