Neurologic AESI Glossary of Terms

Includes terms for the following Brighton Collaboration Case Definitions:

- Encephalitis, myelitis, acute disseminated encephalomyelitis
- Guillain Barré and Miller Fisher Syndromes
- Peripheral Facial Nerve Palsy (Bell's palsy)
- Aseptic meningitis
- Generalized convulsion

Acalculia: inability to perform simple mathematical tasks (addition, subtraction, multiplication)

Agnosia: inability to recognize objects or persons

Agraphesthesia: difficulty recognizing a written number or letter traced on the palm of the hand

Agraphia: impairment in the ability to write

AIDP: acute inflammatory demyelinating polyneuropathy (most common form of GBS)

Alexia: impairment of ability to read

AMAN: acute motor axonal neuropathy (a less common form of GBS)

AMSAN: acute motor and sensory axonal neuropathy (a less common form of GBS)

Aphasia / Dysphasia: impairment of spoken language abilities that affect production and/or comprehension of speech.

Apraxia: inability to execute purposeful movements

Aprosodia: decreased ability to generate or comprehend emotion as conveyed in spoken language

Asterognosia: inability to identify an object by active touch of the hands without other sensory input (e.g. visual)

Ataxia: loss of coordination in voluntary movements; can present in many ways including: lack of coordination, slurred speech, gait abnormalities, inability to balance, trouble eating and swallowing, loss of fine motor skills, tremors;

Atonic motor manifestations: sudden loss in tone of postural muscles; may be preceded by a myoclonic jerk; can be precipitated by hyperventilation in setting of syncope; may reflect a seizure but not in conjunction with a hypotonic hyporesponsive episode, myoclonic jerk or syncope.

Babinski sign (also see primitive reflexes): when sole of foot is stroked the toes fan out and upwards (instead of curling inwards which is normal); also referred to 'upgoing toe' or 'extensor response'

Brudzinski's sign: With Kernig's sign, evidence of meningeal irritation/inflammation; with individual lying supine (on back), passive flexion of the neck results in spontaneous hip flexion. Specificity 90%, sensitivity 5-14% (Putz K, Hayani K, Zar FA. Meningitis Primary care Clin Office Pract 2013; 40:707-736).

Bulbar palsy: dysfunction of one or more lower motor neuron centers in the brain stem. May involve cranial nerves IX to X11 (see table on cranial nerves) with loss or decreased ability to swallow, loss of sense of taste, weakness or loss of ability to move head side to side or up and down, heart rate abnormalities

Central scotoma: loss of central vision

Clinical nadir: the point at which clinical symptoms are felt to be at the clinical worst. This needs to be defined and identified by the health practitioner on a case by case basis.

Clonic movements: sudden, brief (<100 milliseconds) involuntary contractions of the same muscle groups, regularly repetitive at a frequency of about 2-3 contractioins / second

Cortical blindness: total or partial loss of vision in a normal-appearing eye that is caused by damage to the brain's occipital cortex.

Corticospinal tract signs: evidence of upper motor neuron damage (as opposed to lower motor neuron damage seen in GBS). Paralysis with spasticity, increased muscle tone, hyperreflexia and presence of primitive reflexes (defined in glossary)

Cranial nerves: Normal function and evidence of dysfunction.

Cranial nerve (sensory/motor)	Function	Dysfunction
I Olfactory	Sensory: Smell	Hyposmia – decreased ability to smell Anosmia – absence of ability to smell
II Optic	Sensory: Vision	Partial or complete loss of vision
III Oculomotor	Motor: Eye movements	Ophthalmoparesis/plegia: decreased ability/inability to move the eye Double vision, Ptosis: loss of pupillary constriction to light
IV Trochlear	Motor: Eye movements	Decreased or loss of ability to look up
V Trigeminal	Motor: chewing; clenching teeth.	Decreased strength or loss of ability to bite
	Sensory: Ophthalmic branch: sensation to forehead, eyes and eyelid, skin on nose, nasal mucosa	Loss of sensation to forehead, eyelid, nasal mucosa; Loss of corneal reflex: involuntary blinking in response to anything touching the cornea
	Maxillary: sensation to middle third of face	Loss of sensation in middle third of face including side of nose, upper teeth, lower eyelid
	Mandibular: sensation to lower third of face	Loss of sensation in lower third of face, tongue, oral mucosa, lower teeth

VI Abducens	Motor: Eye movements	Decreased ability to look away from the nose (abduction). May have double vision; eye tends to turn inward towards nose
VII Facial	Motor: facial expression muscles	Inability to smile or frown
	Sensory: external ear, taste	Unable to detect sweet or salty on anterior 2/3 of tongue
VIII Vestibulo-cochlear	Sensory: hearing as well as positional changes of head with respect to gravity	Partial or complete loss of hearing; Loss of balance
IX Glosso-pharyngeal	Motor: some swallowing muscles	Loss of swallowing reflex;
	Sensory: taste back 1/3 of tongue	Unable to detect sweet/salty posterior tongue
X Vagus	Motor: throat/soft palate	Swallowing abnormalities; loss of gag reflex
	Sensory: to outer ear, throat, heart and abdominal organs	
	Autonomic: heart rhythm, smooth muscles in airway, lungs, GI tract	Bradycardia, decreased vascular tone, lowered blood pressure
XI Accessory	Motor: neck muscles	Decreased ability to rotate, extend or flex neck and shoulders
XII Hypoglossal	Motor: tongue muscles	Inability to stick out tongue or move it from side to side

Disconnection syndrome: term for various neurologic disorders in which there is an interruption of association pathways located either in one cerebral hemisphere or linking cerebral hemispheres. Symptoms and signs are variable depending on which pathways are affected.

Dysdiadochokinesis: impairment of the ability to perform rapidly alternating movements such as

Dysmetria: impairment in the ability to control the distance, power and speed of an act; one of the impairments observed in cerebellar ataxia. The finger – nose test is often used to assess (individual is asked to touch the clinician's finger and then his/her own nose repeatedly as quickly as possible).

Electromyogram (EMG): used to measure the electrical activity of muscles when at rest and when being used

Encephalitis: inflammation of the brain

Encephalomyelitis: inflammation of both the brain and spinal cord

Encephalopathy: state of being in which consciousness or mental status is altered

Epiphora: excess tearing, spilling over of tears outside of context of crying

Fasciculations: involuntary muscle twitching; often visible under the skn;

Flaccid weakness/paralysis: muscular weakness/total loss of function accompanied by decreased muscle tone.

GBS Overlap syndrome: disease presentation with features of both GBS and Miller Fisher Syndrome

Generalized Motor Manifestations as part of Seizure: bilateral and more than minimal muscle involvement (also see tonic, clonic, tonic-clonic, atonic seizure manifestations/movements)

Glabellar reflex (primitive reflex): Tapping on the forehead just above the bridge of the nose causes blinking of the eye.

Glasgow Coma Score: a scoring system for evaluating the severity of central nervous system involvement after a head injury or other brain injury that can alter the level of consciousness. Assesses motor, verbal and eye-opening responses to commands. Separate scoring systems are available for both adults and children. Test

Hemianopia: loss of one of half of the visual field on one or both side

Hoffman's sign (primitive reflex): an involuntary flexion movement of the thumb or index finger which occurs when the examiner flicks the middle finger nail while keeping the joint nearest the fingernail immobile. It is indicative of an upper motor neuron lesion.

Intention tremor: a coarse hand tremor that is aggravated by goal-directed movements (e.g. reaching to touch an object). Typically indicates cerebellar dysfunction.

Kernig sign: with Brudzinski's sign,indicator of meningeal irritation/inflammation; with hip flexed to 90^{o} (right angle), inability or reluctance to allow full extension of knee (Putz K, Hayani K, Zar FA. Meningitis Primary care Clin Office Pract 2013; 40:707-736).

Meningismus: state of irritation of the membranes (meninges) that surround the brain and spinal code. The signs and symptoms produced by the irritation include neck stiffness, headache, (nuchal rigidity)

Meningitis: inflammation of the membranes (meninges) that surround the brain and spinal cord.

Meningoencephalitis: inflammation of the brain and the membranes (meninges) that surround the brain and spinal cord.

Meningoencephalomyelitis: inflammation of the membranes (meninges) that surround the brain and spinal cord plus inflammation of the brain ('encephal') and the spinal cord ('myelitis')

Monophasic illness pattern: a key criterion for selected BCCD case definitions but which may have nuances as follows:

- for Acute disseminated encephalomyelitis (ADEM): absence of recurrence of symptoms 3 months or more after the worst point of disease (symptomatic nadir) in the absence of treatment or while on appropriate treatment. Multiple sclerosis (MS) is characterized by relapses and recurrences. The first episode may meet the criteria for ADEM but will be diagnosed as MS (Not ADEM) if there is a recurrence 3 months or more after symptomatic nadir. However, if therapy for ADEM is being tapered there may be a recurrence/relapse of symptoms and this is compatible with an ADEM diagnosis.
- for Guillain Barré / Miller Fisher syndromes: from disease onset a steady progression to a symptomatic nadir followed by either a plateau (no worsening, no improvement), fatal outcome or gradual improvement. From the case definition footnote 10: "Fluctuations in level of weakness, before

reaching nadir, or during the plateau or improvement phases, occur in some cases, usually associated with the use of disease-modifying therapies. Such fluctuations usually occur within the first 9 weeks after onset and are followed by eventual improvement.

Myoclonus: quick involuntary muscle contractions that results in visible movement; can involve a single muscle group or several; also, can present as hiccups.

Nadir: lowest point, used to refer to the worst state of clinical symptoms related to GBS, Miller Fisher syndrome, encephalitis, myelitis or acute disseminated encephalomyelitis (ADEM)

Nerve Conduction Studies: measure how well and how fast nerves can send electrical signals.

Nuchal rigidity: the inability to flex the neck forward due to rigidity of the neck muscles caused by meningismum.

Nystagmus: rhythmic, oscillating motions of the eyes

Ophthalmoparesis/plegia – weakness/paralysis of one or more extraocular muscles responsible for eye movements.

Cranial nerve	Innervated muscle(s)	Effect of dysfunction
III – Oculomotor	Superior, inferior and medial rectus muscles and inferior oblique muscle Pupillary constriction	• Eyeball displaced laterally and inferiorly – so gaze is down and out; inability to look up or towards the nose (adduction). • diplopia - double vision • ptosis - drooping of the eyelid • loss of pupillary light reflex
IV Trochlear	Superior oblique	Decreased or loss of ability to look up
VI – Abducens	Lateral rectus	Decreased ability to look away from the nose (abduction). May have double vision; eye tends to turn inward towards nose

Palmar grasp (primitive reflex): when an object is placed in a person's hand and their palm is stroked, the fingers close reflexively 'grasping' the object. This is normal in infancy but when present in older children and adults it indicates frontal lobe damage.

Palmomental reflex (primitive reflex): a twitch of the chin muscle is elicited by stroking the palm of the hand. When present it indicates frontal lobe damage.

Primitive reflexes: Indicate damage to the central nervous system; includes the following all of which are defined separately: Babinski sign, Hoffman's sign; glabellar, snout, rooting, sucking and palmomental reflexes; palmar grasp; (see each definition separately)

Ptosis: drooping of the eyelid(s)

Quantrantopia: loss of one quarter of the visual field on one or both sides

Rooting reflex (primitive reflex): when someone's cheek or lip is touched, the person automatically turns his or her face toward the stimulus and makes sucking motions with the mouth. This is normal in newborn babies but abnormal and indicative of central nervous system damage when it occurs beyond infancy.

Scotoma: an area of partial alteration in the field of vision that is surrounded by a field of normal or relatively well-preserved vision. The alteration may be partially diminished or entirely degenerated visual acuity.

Sensory level: associated with spinal cord disease where a defined level in the spinal cord can be determined below which sensation is decreased or absent

Snout reflex (primitive reflex): Pouting or pursing of the lips that is elicited by light tapping of the closed lips near the midline. It results from abnormal contraction of the orbicularis oris muscle around the mouth. When present the reflex indicates damage to the frontal lobe of the brain.

Sucking reflex (primitive reflex): instinctive sucking movements in response to anything that touches the roof of the mouth. It is normal in infancy but abnormal in older children and adults indicating brain damage.

Symptomatic nadir: point (date) at which clinical symptoms are felt to be at their worst. Should be defined and identified by the health practitioner on a case-by-case basis.

Synkinesis: Involuntary response in a muscle as a result of voluntary contraction of a distant muscle. Occurs due to aberrant reinnervation to a previously denervated muscle from collateral sprouting of a nerve supplying a different muscle. Examples in facial nerve palsy include: eyelid closure that occurs when patient smiles; 'crocodile tears'(Bogorad's syndrome): unilateral lacrimation (tearing) while eating;

Tonic movements: sustained increase in muscle contraction lasting seconds to minutes

Tonic-clonic movements: sequence of tonic movement followed by clonic phase