



**International
Headache Society**

Core Curriculum on Headache for Neurologists

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The aim of the Curriculum is to define the minimum knowledge about headache required by neurologists for qualification as a specialist in neurology, and is based on information collected from different regions worldwide. This Curriculum allows for flexibility, and the exact content should be further defined by local headache specialists in the country in which it is used. In the Core Curriculum each section includes a list of articles relevant for further reading.

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I. Anatomy and Pathophysiology

- Processing and modulation of nociceptive input from head and neck in the peripheral and central structures (trigeminovascular system, meninges, trigeminocervical junction, pons, periaqueductal grey matter, parabrachial nucleus, amygdala, hypothalamus, first order and higher order thalamic nuclei and sensorimotor cortical areas, cingulate and insular cortex, sympathetic and parasympathetic fibres).
 - Examination of the peripheral nerves, muscles, ligaments and other soft tissue structures of the head and neck, including tenderness of the greater occipital nerve, lesser occipital nerve, supraorbital nerve, supratrochlear nerve, temporal artery, tenderness of cervical structures and range of motion in the cervical area, and examination of the temporomandibular joints, to identify peripheral sources of headache pain.
- Disrupted sensory input processing during migraine attack, to understand the concepts of allodynia, photophobia, phonophobia, and osmophobia.
 - Examination of allodynia in the head and neck.
- The pathophysiology of a migraine attack, role of cortical spreading depression, peripheral and central mechanisms involved in the chronicity process.
- The molecular imprints of migraine, neuropeptides, genetic models and therapeutic targets.
- The pathophysiology of tension-type headache.
- The pathophysiology of trigeminal autonomic cephalalgias (TACs).
 - Examination of autonomic features, and location of the sphenopalatine ganglia and vagal nerve.
- The pathophysiology of neuropathic pain, trigeminal and other cranial neuralgias and persistent pain in the face and/or head.
 - Location of infraorbital nerve, mental nerve and auriculotemporal nerve etc, for peripheral interventions.

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II. Epidemiology, Environment, Disability and Genetics

- Epidemiology, burden, costs and impact of migraine, tension-type headache, cluster headache, and other trigeminal autonomic cephalalgias, trigeminal neuralgia, persistent idiopathic facial pain, and the most important secondary headache disorders (e.g. medication overuse headache, post-traumatic headache).
- The incidence, prevalence and burden of headaches in children and adolescents, pregnancy and older subjects with or without dementia.
- Physical, psychological, social and environmental factors contributing to headache.
- Modifiable and non-modifiable risk factors for chronification of primary headaches
- Underlying genetic and insights into molecular and biological aspects of migraine and cluster headache and other special headache disorders (e.g. headache in mitochondrial disorders).

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III. Clinical Investigation for Headache

- To understand the importance and significance of proper history taking.
- To understand the significance of neurological examination, including fundoscopy (specifically signs of papilledema) and pericranial muscle examination.
- How and when to order and how to interpret blood tests, lumbar puncture, neuroimaging, angiography and other laboratory testing.
- Understand the significance of blood tests, such as erythrocyte sedimentation rate and C-reactive protein.
- Understand the significance of lumbar puncture in secondary headaches, such as headaches secondary to intracranial hypo/hypertension.
- Understand and interpreting the significance of neuroimaging findings in migraine, such as white matter lesions.
- Understand the significance of magnetic resonance imaging in secondary headaches, including magnetic resonance angiography, magnetic resonance venography and other techniques for elucidating causes, such as idiopathic intracranial hypertension, spontaneous intracranial hypotension, mitochondrial, vascular and neoplastic diseases.
- Understand the significance of cervical and temporomandibular imaging.
- Understand the significance of neuroimaging in cranial neuralgias.

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IV. Diagnosis and Classification of Headache Disorders According to the International Classification of Headache Disorders, 3rd Edition (ICHD-3)*

General concepts, major groups and subgroups.

- Diagnostic entities and criteria.
 - Migraine subtypes including chronic migraine.
 - Tension-type headache.
 - Trigeminal Autonomic Cephalalgias.
 - Other common primary headaches.
 - Secondary headache disorders.
 - Medication-overuse headache.
 - Headache attributed to head and/or neck trauma; trigeminal neuralgia & other cranial neuralgias.
 - Headache attributed to temporomandibular joint (TMJ) disorders.
 - Trigeminal neuralgia & other cranial neuralgias.
- Differential diagnoses of the above diagnostic entities.
- Concepts of chronicity within the classification.
 - Chronic vs. episodic migraine and tension-type headache.
 - Chronic vs. episodic TACs.
 - Chronic vs. episodic secondary headaches.
- Diagnostic criteria for the most common paediatric headache diagnoses and differences in presentation between children, adolescents and adults.
- To be able to use the classification to diagnose a given case of a common primary headache, an unusual or a secondary headache; including a case with multiple headache disorders*.
- The role of history, examination and appropriate investigations in the diagnosis of primary and secondary headache disorders.
- Warning signs (red flags) suggestive of secondary headache disorders for various clinical situations (e.g. thunderclap headache, headaches with focal neurological deficits) and how to evaluate and treat them.

- Clinical characteristics, diagnostic criteria and treatment of the following secondary headache syndromes:
 - Persistent post-traumatic headache.
 - Headache attributed to non-traumatic intracranial haemorrhage.
 - Headache attributed to venous sinus thrombosis (CVT), arterial and vertebral dissection and other cranio-cervical vascular disorders.
 - Headache attributed to giant cell arteritis (temporal arteritis).
 - Headache attributed to reversible cerebral vasoconstriction syndrome (RCVS)
 - Headache attributed to idiopathic intracranial hypertension (IIH).
 - Headache attributed to low cerebrospinal fluid (CSF) pressure.
 - Medication-overuse headache.
 - Headache attributed to bacterial meningitis and meningoencephalitis.
 - Headache attributed to viral meningitis or encephalitis
 - Headache attributed to intracranial neoplasia.
 - Sleep apnoea headache.
 - Headache attributed to acute angle-closure glaucoma.

* Although in clinical practice headache patients can be diagnosed by a skilled practitioner without the use of criteria, the members of this committee recommend using the common language of ICHD-3 criteria as it is important both in clinical practice and for research reasons. It is important to remember that a patient can have more than one headache disorder and thus separate diagnoses can be applied as per ICHD-3 criteria. On-line versions of the ICHD-3 are available (<https://ichd-3.org>) as is a Pocket Version for clinical usage. Visit the IHS website (<http://www.ihs-headache.org>).

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V. Therapy

- Non-pharmacological and behavioural therapy.
 - Trigger factor awareness and avoidance.
 - Headache diaries (calendars) and their importance as part of follow-up and identification of possible triggers of headaches in headache patients.
 - Behavioural medicine therapies (biofeedback training, neurofeedback, relaxation techniques, visual imagery, cognitive restructuring, psychotherapy, counselling, etc.).
 - Physical techniques, such as routine exercise, physical therapy etc., including evidence for efficacy.
 - Natural substances, such as vitamins, minerals, herbs, and supplements (vitamin B2, magnesium, feverfew, butterbur, coenzyme Q10, melatonin, etc.), including evidence for efficacy.
 - Complementary therapy of headache, including evidence for efficacy.
- Acute pharmacotherapy of migraine, chronic migraine, status migrainosus, tension-type headaches, trigeminal autonomic cephalalgias (TACs), and miscellaneous headaches.
 - Evidence-based guidelines for acute therapy.
 - Evidence base for use of all classes and individual drugs within a class.
 - Evidence base for use of neuromodulation for acute therapy.
 - Mode of action, properties, dosages, mode of administration, drug–drug interactions, adverse events, and contraindications of preventive drugs.
 - Therapeutic strategies such as step care and stratified care, and the importance of correct timing and dosing.
 - Rescue and backup treatments when the first-line therapy is ineffective.
 - Limits of acute headache treatment, the risk of developing medication overuse headache, including the relative risk of various categories as causative factors.
 - Therapeutic options in menstrual or menstrually-related migraine.
- Preventive pharmacotherapy of migraine, chronic migraine, tension-type headache, TACs and miscellaneous headaches.
 - Evidence-based guidelines for prevention by drugs, interventional treatments (onabotulinum toxin injections, nerve blocks, etc.) and neuromodulation

- Evidence base for use of all classes and individual drugs within a class
 - Mode of action, properties, dosages, mode of administration, drug–drug interactions, adverse events and contraindications of preventive drugs.
- Preventive therapeutic strategies, such as the selection of agents in the context of comorbidities according to their effect and side-effect profile, and the necessity of concomitant withdrawal of acute care medications in the context of medication overuse headache.
- Withdrawal therapy in the presence of acute headache medication overuse
 - Outpatient and inpatient options.
- Therapeutic options during pregnancy and lactation.
- Therapeutic options in children, adolescents, and elderly patients with primary headache disorders.
- Intravenous protocols for refractory patients: inpatient treatment and management, criteria for hospital admission.
- Surgical and interventional therapies (indications and limitations).
 - Evidence base for use of onabotulinum toxin A treatment for chronic migraine and other minimally invasive procedures, such as occipital nerve block and sphenopalatine ganglion block for cluster headache and migraine.
 - Trigeminal neuralgia, chronic and intractable migraine, cluster headache, other TACs.

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VI. Comorbidities, Course and Prognosis of Headache Disorders

- Psychosocial factors in the context of migraine, tension-type headache, TACs, as well as other primary, and the secondary disorders. The impact of medication overuse on headache progression and outcomes.
- The natural course of primary and secondary headache disorders.
- Non-psychiatric comorbidities.
- Psychiatric comorbidities of migraine, tension-type headache, cluster and other primary and secondary headaches, including depression, anxiety, panic disorder, psychosis, and others.
- Depression and anxiety questionnaires.
- Most used headache-related disability questionnaires (e.g. MIDAS, HIT-6, HURT-index).
- Migraine as a risk factor for stroke.
- Estrogen and progesterone treatment in migraineurs with and without aura.

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VII. Miscellaneous

- To understand the basic methodological issues of clinical studies in headache. In particular:
 - Selection of patients.
 - Trial design, including, blinding, use of placebo and/or active comparator.
 - Evaluation of endpoints.
 - Report of adverse events.
 - Sample size.
- To understand and promote the global, regional, and local interests of people with headache disorders, as well as challenge their pervasive stigma.
- To understand the ethical issues arising in headache research, headache management and relationships with the pharmaceutical industry.

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