OBJECTIVES

- To increase the use of evidence-informed approaches for the prevention, assessment, diagnosis, and treatment of headache for patients in primary care.
- To promote appropriate specialist referrals and use of diagnostic tests in patients with headache.
- To provide guidance on the parenteral pharmacological treatment of refractory migraine attacks for use in appropriate settings where parenteral medications can be safely administered.
- To encourage patients to engage in appropriate self-management.

TARGET POPULATION

Adult patients 18 years or older in primary care settings

EXCLUSIONS

- Some guidance on the use of parenteral medications for refractory migraine attacks is given, but this guideline does not provide comprehensive recommendations for the management of patients with headache in emergency departments or inpatient settings.
- Although some advice is provided regarding the diagnosis and investigation of secondary headache disorders, and the management of cervicogenic headache and temporomandibular disorder is discussed briefly, the guideline does not provide advice on the management of other secondary headache disorders.
- This guideline does not provide advice on the diagnosis and management of headache in children and adolescents.

For information on this guideline, see Scope of Guideline, Appendix A – Categorization of Recommendations (✓, X, ?), Appendix B – Evidence Source, Appendix C – Interventions and Practices Considered, and Appendix D – List of Revisions. Other appendices mentioned in this guideline include: Appendix E – Medications for Migraine Headache, Appendix F – Resources and Tools, and Appendix G – Summary of the Epidemiology and Disease Burden of Common Headache Disorders. References can be found at the end of this document.

It is recognized that not all recommended treatment options are available in all communities.

Note: Statements in italics relate to harm. When harm statements were available in the seed guidelines or in a systematic review identified from a supplementary literature search required by the Guideline Development Group (GDG) or Guideline Update Committee (GUC), these were added to the recommendations or the medication table, where appropriate. The lack of a harm statement for some recommendations indicates an absence of adverse event information in these information sources, not an absence of adverse events for the intervention itself. Care should be taken when applying any intervention that, in your professional experience, could have safety implications for the patient.

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Scope of Guideline		

Disease/Conditions(s) Targeted:
• Primary headache disorders:
  ○ Migraine
  ○ Tension-type headache
  ○ Cluster headache
  ○ Hemicranias continua
  ○ New daily persistent headache
• Secondary headaches:
  ○ Medication-overuse headache
  ○ Cervicogenic headache
  ○ Headache secondary to temporomandibular disorders
	Category:
	• Prevention
	• Diagnosis
	• Evaluation
	• Management
	• Treatment
		Intended Users:
		• Primary healthcare providers, for example:
		  ○ Family physicians
		  ○ Physical therapists
		  ○ Occupational therapists
		  ○ Nurses
		  ○ Nurse practitioners
		  ○ Pharmacists
		  ○ Psychologists
		  ○ Chiropractors

RECOMMENDATIONS

SECTION 1: HEADACHE DIAGNOSIS AND INVESTIGATION

Recommendation	Evidence Source (Legend on Page 43)
Approach to Headache Diagnosis	
Background Statement Headache can be a symptom of many disorders. The first decision in headache diagnosis is to decide whether the patient has a primary or a secondary headache disorder. Unlike secondary headaches, which are caused by another underlying condition (e.g., brain tumour, head injury) primary headache disorders (e.g., migraine, tension-type headache) are not caused by another disorder or disease. A good history and physical examination is usually sufficient to make a diagnosis in most patients with headache. In some patients, additional investigations are required. For links to instructional videos on neurological, neck, and temporomandibular exams, see Appendix F.	
Headache History	
✓ For the patient presenting with headache for **the first time** or **with a significant change in headache pattern**, the headache history should include information on the following:	EO (GDG)

Recommendation	Evidence Source (Legend on Page 43)
1. Headache attack onset (thunderclap, association with head or neck trauma) and history of previous attacks (progression of symptoms). 2. Duration of attacks (under three hours, over four hours, or continuous) and days per month or week with headache. 3. Pain location (unilateral, bilateral, frontal, peri-orbital, occipital; associated neck pain). 4. Headache associated symptoms (nausea, vomiting, photophobia, phonophobia, conjunctival injection, or rhinorrhea). 5. Relationship of headache to possible precipitating factors (stress, posture, cough, exertion, straining, neck movement, jaw pain, etc.). 6. Headache severity and effect of the headaches on work and family activities. 7. Acute and preventive medications tried in the past, and response to these medications and side effects. 8. Presence of co-existing conditions that may influence treatment choice (insomnia, depression, anxiety, hypertension, asthma, and history of heart disease or stroke). Refer to Appendix F: Headache History Guide.	
Physical Examination	
✓ Patients presenting to a healthcare provider **for the first time** with headache, or **with a headache that differs from their usual headache**, should have a physical examination that includes the following: 1. Screening neurological examination 2. Neck examination 3. Blood pressure measurement 4. Focused neurological examination, if indicated. 5. Examination for temporomandibular disorders, if indicated.	CS (G4)
✓ **Screening Neurological Examination** The screening neurological examination should consist of the following: 1. General assessment of mental status. 2. Cranial nerve examination: fundoscopy, examination of pupils for symmetry and reaction to light, eye movements, visual field examination, and evaluation of facial movement for asymmetry and weakness.	EO (G4)

Recommendation	Evidence Source (Legend on Page 43)
3. Assessment of all four limbs for unilateral weakness, reflex asymmetry, and evaluation of coordination in the upper limbs. 4. Assessment of gait, including heel-toe walking (tandem gait).	
✓ **Neck Examination** Physical examination of patients with headache should include an assessment of neck posture and range of motion, and palpation for muscle tender points.	NRCS (G4)
✓ **Focused Neurological Examination** A focused neurological examination should be added if indicated by patient symptoms and/or abnormal signs on the screening examination (e.g., dysarthria would lead to more detailed assessment of lower cranial nerves; reflex asymmetry would lead to assessment of plantar responses).	EO (GDG)
✓ **Examination for Temporomandibular Disorders** In the patient with headache and associated jaw complaints, the physical examination should include clinical assessment of jaw movements and palpation of the muscles of mastication for tender points.	EO (GDG)
Clinical Diagnosis	
Background Statement Headache disorders can be divided into primary and secondary headaches. In general, the history and neurological examination can be used to differentiate the two headache types, although neuroimaging or other tests may be necessary in selected patients if there are other clinical features that suggest a secondary headache may be a possibility. Refer to Section 1: Diagnosis and Neuroimaging in the Emergent/Urgent Setting (includes red flags) and Section 1: Diagnosis and Neuroimaging in the Outpatient Setting. For migraine and tension-type headaches, if the patient has headaches on 15 or more days a month for more than three months, the word "chronic" is used as part of the diagnosis (chronic migraine or chronic tension-type headache).	
Primary Headaches	
Background Statement Primary headaches are headache disorders that are not due to another underlying medical condition. They include migraine, tension-type headache, cluster headache, and some less common headache disorders.	
✓ For patients with recurrent headache attacks and a normal neurological examination (other clinical symptoms may also need to be considered, in some patients):	

Recommendation	Evidence Source (Legend on Page 43)
A. Diagnose **migraine** without aura (migraine with aura if an aura is present) if they have at least two of the following: 1) nausea during the attack; 2) light sensitivity during the attack; or 3) some of the attacks interfere with their activities. (Migraine with headache on less than 15 days a month is usually referred to as "episodic migraine," to distinguish it from chronic migraine.) Refer to Section 2: Management of Migraine Headache.	NRCS (G4)
B. Diagnose **episodic tension-type headache** if their headaches do not meet migraine diagnostic criteria (above), are not associated with nausea, and have at least two of the following: 1) bilateral headache; 2) non-pulsating pain; 3) mild to moderate intensity; or 4) headache is not worsened by activity. Refer to Section 3: Management of Tension-Type Headache.	CS (G4)
C. Diagnose **cluster headache** or another trigeminal autonomic cephalalgia if their headaches fit all the following: 1) frequent; 2) severe; 3) brief (duration of less than 3 hours); 4) unilateral; and 5) ipsilateral conjunctival injection and/or tearing and/or restlessness during the attacks (ipsilateral ptosis and/or miosis may be present on examination). Refer to Section 5: Management of Cluster Headache; neurologist referral is recommended.	CS (G4)
✓ For patients with headache on 15 or more days per month for more than three months and with a normal neurological examination:	
A. Diagnose **chronic migraine** if their headaches meet migraine diagnostic criteria (above) or are quickly aborted by migraine specific medications (triptans or ergots) on eight days a month or more.	EO (GDG)
B. Diagnose **chronic migraine and medication-overuse headache** (make both diagnoses) if their headaches meet the diagnostic criteria for chronic migraine and the patient uses ergots, triptans, opioids, or combination analgesics on 10 days a month or more, or uses plain acetaminophen or NSAIDs on 15 days a month or more. Refer to Section 4: Management of Medication Overuse Headache.	EO (GDG, GUC)
C. Diagnose **chronic tension-type headache** if their headaches meet episodic tension-type headache diagnostic criteria (above), except mild nausea may be present. Refer to Section 3: Management of Tension-Type Headache. Note: If patients meet the diagnostic criteria for chronic migraine, this excludes a diagnosis of chronic tension-type headache.	EO (GDG)
✓ Although chronic migraine and chronic tension-type headache may result in continuous headache in some patients, two other less common headache syndromes should be considered in patients with continuous headache. For patients with continuous daily headache for more than three months with a normal neurological examination:	

Recommendation	Evidence Source Legend on Page 43)
A. Diagnose **hemicranias continua** if their headache: 1) is strictly unilateral; 2) is always on the same side of the head (ptosis and/or miosis may be present on examination); and 3) responds dramatically to indomethacin. Refer to Section 6: Other Headache Disorders: neurologist referral is recommended.	EO (GDG)
B. Diagnose **new daily persistent headache** if their headache is unremitting since its onset. It is important to consider secondary headaches in these patients. Neurologist referral is recommended.	EO (G4)
Secondary Headaches	
Background Statement Secondary headaches are headaches that are due to another definable medical disorder. Headache secondary to medication overuse is considered a secondary headache, but because it usually occurs in patients with migraine, it has been considered under primary headaches above. Secondary headache can be caused by disorders of the neck, and by head and neck trauma. A detailed discussion of the diagnosis and management of secondary headache disorders is beyond the scope of this guideline. Some information is provided in Section 1: Headache Diagnosis and Investigation and Section 6: Other Headache Disorders.	
✓ **Cervicogenic headache** should be considered in patients with neck pain and occipital head pain, with or without pain radiation to other head regions (or face), when pain is precipitated or aggravated by neck movements or sustained neck postures and there are abnormalities on examination of the neck (abnormal movement, muscle tone, or muscle tenderness). If the headache occurs after neck trauma and persists for more than three months, the term "chronic headache attributed to whiplash injury" should be used. Caution: Patients with migraine often complain of neck discomfort during a headache and may have muscular tender points. These appear to be secondary to the migraine pain and do not necessarily indicate a neck disorder as cause of the headache.	EO (GDG)
✓ **Post traumatic headache** should be diagnosed when a new headache disorder begins within seven days of a head injury. These may occur even after a mild head injury. If the headache persists for more than three months, it is termed a "persistent headache attributed to head trauma."	EO (GDG)
✓ **Temporomandibular disorder** should be considered in patients with headache and/or facial pain who have painful jaw clicking, jaw locking, and tenderness of muscles of mastication, tenderness of the temporomandibular joints, or limitation of mandibular movement.	EO (GDG)

Recommendation	Evidence Source (Legend on Page 43)
Diagnosis and Neuroimaging in the Emergent/Urgent Setting	
Background Statement This section has been divided into two sections: • Emergency Red Flags: The presence of these features in association with headache requires immediate investigation and treatment, usually through referral to an emergency room and specialist involvement. • Urgent Red Flags: These indicate a less emergent situation, but usually require urgent (i.e., within hours to days) investigation and specialist involvement.	
✓ **Emergency Red Flags (need to be addressed immediately)**	
1. Thunderclap headache: Onset of severe headache that is sudden (seconds to one minute from onset to peak intensity).	EO (GDG)
Patients presenting with severe headache of sudden onset (thunderclap headache) should be sent to an emergency department with urgent computerized tomography (CT) capability for immediate investigation to exclude subarachnoid hemorrhage. If subarachnoid hemorrhage is not present on head CT scanning, other investigations (e.g., lumbar puncture) may be necessary. Specialist involvement and further neuroimaging may also be necessary, as the differential diagnosis for thunderclap headache includes arterial dissection, dural sinus thrombosis, pituitary apoplexy, and reversible cerebral vasoconstriction syndrome.	CS (G4)
2. Headache with fever and neck stiffness (meningismus): Patients with suspected bacterial meningitis should be sent immediately to an emergency department with urgent CT and lumbar puncture capability for investigation and treatment. Antibiotic therapy should not be unduly delayed by these investigations.	CS (G4)
3. Papilledema in a patient with altered level of consciousness and/or focal signs: Patients with papilledema and altered level of consciousness and/or focal neurological signs may have a space occupying lesion and may be at risk for incipient transtentorial herniation. They should be sent immediately to an emergency department with neuroimaging capability and specialist resources for investigation and treatment.	NRCS (G4)
4. Acute angle-closure glaucoma: Patients with head pain and signs and symptoms of acute angle closure glaucoma (non-reactive and mid-dilated pupil, acutely inflamed eye, and visual disturbance with pain and nausea) should be sent immediately for	CS (G4)

Recommendation	Evidence Source (Legend on Page 43)
assessment by an ophthalmologist or to an emergency department with the capability to measure intraocular pressure and initiate treatment.	
✓ **Urgent Red Flags (need investigation and referral within hours to days)**	
1. Signs of systemic illness in the patient with new-onset headache: Patients with new-onset headache or a major change in headache pattern and a systemic illness (cancer, HIV, etc.) that may indicate a serious cause for the headache may require urgent specialist consultation and/or investigation.	G (G4)
2. New headache in patients over 50 years of age with other symptoms suggestive of temporal arteritis: Patients over 50 years of age with new-onset headache and other symptoms of temporal arteritis (jaw claudication, transient visual loss, etc.) should receive urgent investigation, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and if indicated, temporal artery biopsy, and may require specialist consultation and early systemic corticosteroid treatment.	NR (G4)
3. Papilledema in an alert patient without focal neurological signs: Patients with papilledema, a normal level of consciousness, and no focal neurological signs may have benign intracranial hypertension (pseudotumour cerebri). They should have urgent specialist referral and will need urgent neuroimaging. An intracranial space-occupying lesion should be ruled out prior to lumbar puncture to measure cerebral spinal fluid (CSF) pressure. Further investigation may be required as the differential diagnosis would include cerebral venous sinus thrombosis.	EO (GDG)
4. Elderly patient with new headache and subacute cognitive change: Elderly patients with a new headache and a recent subacute (days to weeks) decline in cognition may have a subacute or chronic subdural hematoma. A history of head injury is not always present. They require urgent specialist referral and/or neuroimaging.	EO (GDG, GUC)
Diagnosis and Neuroimaging in the Outpatient Setting	
X **Neuroimaging in Typical Migraine**	
As the diagnostic yield of neuroimaging in patients with typical recurrent migraine attacks is very low, neuroimaging is not indicated in patients with recurrent headaches with the clinical features of migraine, a normal neurological examination, and no red flags for potential causes of secondary headache.	CS (G4) + qSR (IHE Database)
Sinus x-rays and cervical spine x-rays are not recommended for the routine evaluation of the patient with migraine.	EO (G3)

Recommendation	Evidence Source (Legend on Page 43)
✓ **Atypical Headaches and Changes in Headache Pattern** Patients with headaches that do not fit the typical pattern of migraine or tension-type headache, and patients with a major change in headache pattern should be considered for specialist consultation and/or neuroimaging, depending on the clinical judgment of the practitioner.	EO (G1b, GUC)
✓ **Unexplained Focal Signs in the Patient with Headache** Patients with unexplained focal neurological signs and recurrent headache require specialist referral and/or neuroimaging to exclude a space-occupying central nervous system (CNS) lesion. In the non-urgent setting, brain magnetic resonance imaging (MRI) is the neuroimaging procedure of choice, but a non-contrast brain CT is usually adequate to exclude a space-occupying lesion as a cause of headache.	CS (G4) + qSR (IHE Database) G (G4)
✓ **Unusual Headache Precipitants** Patients with headache clearly precipitated by exertion, cough, or Valsalva should be considered for specialist referral and/or a brain MRI scan to exclude a Chiari 1 malformation or a posterior fossa lesion (but it must also be considered that patients with typical migraine may have exertion as one of their headache triggers). Patients in whom postural change has a major effect on headache intensity need specialist consultation and will require investigation. For headache that worsens on standing, brain MRI scanning with gadolinium enhancement may be needed to look for indirect evidence of a CSF leak (dural enhancement, etc.). For headache that worsens on lying down, a brain CT or MRI scan can be used to exclude a space-occupying lesion. As the differential diagnosis includes cerebral venous sinus thrombosis, additional investigation may be required.	CS (G4) + qSR (IHE Database) CS (G4) EO (GDG) EO (GDG)
✓ **Unusual Aura Symptoms** For patients with unusual aura symptoms, consider referral to a neurologist for diagnosis and possible investigation.	EO (GDG)
✓ **Cluster Headache and Other Uncommon Primary Headache Syndromes** In patients with new-onset cluster headache or another trigeminal autonomic cephalalgia, hemicrania continua, or new daily persistent headache, specialist referral should be considered for investigation and treatment.	CS (G4) + qSR (IHE Database)

Recommendation	Evidence Source (Legend on Page 43)
✓ **Late Onset Headache** For patients with headache that begins after the age of 50 years and who have no other red flags, consider neuroimaging for space-occupying lesion and/or complete blood count (CBC), C-reactive protein (CRP), and ESR to investigate for giant cell (temporal) arteritis.	NR (G4)
? **Persistent Headache Attributed to Head Trauma** There is insufficient evidence to recommend for or against neuroimaging in patients with persistent headache attributed to head trauma who do not have new focal signs or other red flags to indicate the need for neuroimaging. If, on a case by case basis, it is felt that there may be a need for neuroimaging, consider specialist referral.	EO (GUC)
Neuroimaging for Patient Reassurance	
X Clinicians considering neuroimaging primarily to reassure patients with headache should consider whether this is in the best interest of the patient and a prudent use of resources, or whether other means of reassurance (i.e., careful explanation of the circumstances, patient education, or specialist referral) would be more advisable. Clinicians requesting neuroimaging should be aware that any imaging study, particularly MRI, can identify incidental findings which may or may not correlate with clinical findings, and which may cause unnecessary patient anxiety.	RCT (G4)
Electroencephalography (EEG)	
X An EEG is not recommended for the routine evaluation of patients with headache.	EO (G1a, G3)

SECTION 2: MANAGEMENT OF MIGRAINE HEADACHE

Recommendation	Evidence Source (Legend on Page 43)
General Approach to Management	

Background Statement

A comprehensive treatment approach should be considered for patients with significant disability. Because severe migraine is a chronic medical disorder, and management is complex, it is important that patients participate actively in their migraine management. This approach could include the following:

- Attention to lifestyle and specific migraine triggers in order to reduce attack frequency.
- Acute pharmacological therapy for individual migraine attacks
- Prophylactic pharmacological therapy, when indicated, to reduce attack frequency.
- Non-pharmacological therapies.
- Evaluation and treatment of co-existing medical and psychiatric disorders. For patients with refractory headache syndromes, sleep disorders including sleep apnea and insomnia should be considered as possible exacerbating factors.
- Encouragement of patients to participate actively in their treatment and to employ self-management principles.

In migraine self-management, patients partner with the health professional and take on an active and central role in the management of their migraine. A comprehensive headache program helps patients acquire the necessary knowledge and master skills to manage their migraine more effectively. These skills may include some or all of the following:

- Self-monitoring to identify factors that influence their migraine.
- Managing migraine triggers effectively.
- Pacing activity to avoid triggering or exacerbating migraine.
- Maintaining a lifestyle that does not worsen migraine.
- Relaxation techniques.
- Maintaining good sleep hygiene.
- Stress management skills.
- Cognitive restructuring to avoid catastrophic/negative thinking.
- Communication skills to talk effectively about pain and pain management with family and others.
- Using acute and prophylactic medication appropriately.

Headache ‘apps’ for patients are an active area of interest, but there is no information on whether they improve patient outcomes.

Recommendation	Evidence Source (Legend on Page 43)
✓ **Headache Diaries** Consider encouraging patients to keep a headache diary to monitor headache frequency, intensity, triggering factors, and medication use. Refer to the patient information sheet *What You Should Know About Headache Self-Management* available at www.ihe.ca/research-programs/hta/aagap/headache, and the Headache Diary Sheets available at: www.topalbertadoctors.org/cpgs/10065.	EO (G3)
✓ **Additional Assessment of Disability** The degree of migraine-related disability present should be assessed clinically. Practitioners may find formal disability scales helpful in selected patients: Headache Impact Test (HIT-6) (www.headaches.org/2007/11/16/headache-management-tools-hit/) and Migraine Disability Assessment Scale (MIDAS) (www.headaches.org/wp-content/uploads/2015/01/MIDAS.pdf?7a7d37).	NRCS (G4)
✓ **Psychiatric Comorbidities** Assessment of patients with migraine should include a clinical evaluation for the presence of significant depression and/or anxiety. If present, these should be treated according to evidence-based mental health recommendations.	NRCS (G3)
Lifestyle and Migraine Trigger Management	
Background Statement Some lifestyle factors have the potential to increase migraine frequency. Although scientific study of these factors and their effects has been limited, the following are considered important by many clinicians: • Irregular meals or skipped meals • Irregular sleep or too little sleep • A stressful lifestyle • Excessive caffeine consumption • Lack of exercise • Obesity Most patients with migraine report several specific factors that increase the likelihood that they will have a migraine attack. These are commonly referred to as triggers. Some of these can be avoided or managed in some other way. Refer to the patient handout *Food Triggers, Caffeine, and Migraine Attacks*, available at: www.topalbertadoctors.org/cpgs/10065.	

Recommendation	Evidence Source (Legend on Page 43)
✓ **Lifestyle Factors** Advise patients to adjust their lifestyle to avoid exacerbating their migraine (e.g., avoid missing meals; avoid dehydration; maintain adequate, regular sleep). Refer to the patient information sheet *What You Should Know About Headache Self-Management*, available at www.ihe.ca/research-programs/hta/aagap/headache.	EO (GUC)
✓ **Multimodal Multidisciplinary Care** Multimodal multidisciplinary care (e.g., exercise, nutritional counselling, relaxation training, and stress management training) is recommended for migraine management.	RCT (G9)
✓ **Specific Migraine Triggers** Patients should be advised to consider whether some of the commonly reported migraine triggers, including food triggers, are important for them. A headache diary is helpful in this assessment. Refer to the patient information sheet *What You Should Know About Headache Self-Management* and the Headache Diary Sheets available at www.ihe.ca/research-programs/hta/aagap/headache, and the patient handout *Food Triggers, Caffeine, and Migraine Attacks* available at: www.topalbertadoctors.org/cpgs/10065.	EO (GDG)

Acute Pharmacological Therapy

Background Statement

Acute treatment of migraine attacks should be individualized on the basis of the patient's symptoms and level of disability.

The goals for acute treatment are as follows:

- Treat attacks effectively, rapidly, and consistently.
- Minimize adverse events.
- Restore the patient's ability to function.

The following four questions can be used to help determine whether the patient's response to current acute migraine pharmacological therapy is adequate. If the patient answers yes to all four questions, his/her treatment regimen does not need to be changed. If the patient answers no to at least one of these questions, consider changing the patient's acute migraine medication, if possible.

- Do you have significant relief within two hours of taking the medication?
- Is the medication well tolerated?
- Do you take only one dose?
- Can you resume normal occupational, social, and family activities within two hours after taking the medication?

Recommendation	Evidence Source (Legend on Page 43)
✓ **Assessment of the Need to Change a Patient's Acute Migraine Medication** Patients should be specifically assessed at follow-up visits to determine if their acute migraine medications need to be changed.	EO (GDG)
✓ **Early Treatment of Migraine Attacks** Advise patients to take their medication early in their migraine attack, where possible, to improve effectiveness. The strategy may not be appropriate for patients with frequent attacks who are at risk for medication-overuse headache (see medication overuse recommendation). For patients with migraine with aura who are using triptans, it is usually advisable to take the triptan just as the headache phase is starting. Some patients report that triptans are effective when taken during the aura.	NR (G7), EO (GDG)
✓ **Rescue Medication** For severe migraine attacks, consider providing an additional acute medication ("rescue medication") if the patient's usual acute medication does not work consistently for every attack.	EO (GDG)
Acute Medications	
Background Statement Non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, and triptans are the primary drugs for treating acute migraine. In addition to the NSAIDs listed in the recommendations below, others may also be helpful for some patients, based on clinical experience. These include ketorolac 10 mg orally, but there are no double-blind, randomized controlled trials to support this practice. The response of a patient with migraine to medications is individual and idiosyncratic. Although all triptans have a similar molecular structure, the differences between them are sufficient that one patient will find better efficacy and/or fewer side effects with one particular triptan compared with another, while a second patient will find the opposite. Several acute medication trials may be necessary before an appropriate acute medication is found for a specific patient. Some patients with attacks of varying severity may need access to more than one medication for successful migraine management. Patients with migraine may have sufficient nausea or vomiting during attacks to reduce the effectiveness of oral tablets. Some patients with nausea only may find orally dissolving tablets (wafers) helpful, although drug absorption is still primarily from the gastrointestinal tract and not through mouth mucous membranes.	

Recommendation	Evidence Source (Legend on Page 43)
The triptan nasal sprays, particularly zolmitriptan nasal spray, have been demonstrated to be absorbed at least partially through the nasal mucosa. Therefore these formulations may be more helpful in patients with severe nausea. The injectable formulation (available only as sumatriptan) provides the most certain drug delivery in the presence of nausea and vomiting, and can be particularly helpful for patients with vomiting early during migraine attacks. Most acute medications do not work on every occasion when they are used. Therefore patients should try a medication for several different attacks before concluding that it is ineffective. Dimenhydrinate is widely available and often used by patients for nausea. This complex formulation contains both diphenhydramine (an H1 antagonist that mediates the anti-emetic effect), and a theophylline derivative (a CNS stimulant related to caffeine). Dimenhydrinate has some abuse potential. Given the lack of evidence for its efficacy in migraine, metoclopramide or domperidone is a better choice for treating migraine-related nausea. Similarly, there is no good evidence that ondansetron is effective in migraine-related nausea. See Appendix E: Table E.1: Medications Used for Acute (Symptomatic) Treatment of Migraine for more information on tablet sizes, daily dosage, drug titration, and side effects of acute medications for migraine. For more information on the use of acute medications in migraine, including a discussion of how to organize them into treatment strategies, see the Canadian Headache Society guidelines, available at migrainecanada.org/images/stories/PDFs/acute_migraine_guideline_complete.pdf.	
✓ **NSAIDs and Acetaminophen** Acetylsalicylic acid (ASA) 1,000 mg, ibuprofen 400 mg, diclofenac potassium 50 mg, and naproxen sodium 550 mg are recommended for acute treatment in patients with migraine of all severities. For patients desiring a faster onset of therapeutic effect, diclofenac powder for oral solution (50 mg), solubilized ibuprofen (400 mg) and effervescent ASA (975 to 1,000 mg) are recommended for migraine attacks of all severities. Acetaminophen 1,000 mg is recommended for acute treatment of migraine attacks of mild to moderate severity. Daily dosage should not exceed 4,000 mg to avoid liver dysfunction. If NSAIDs and/or acetaminophen are not effective by history or after a brief treatment trial, alternative medications (e.g., a triptan) should be tried. *NSAIDs can cause gastric irritation and bleeding and renal dysfunction.*	SR (G1d, G7, IHE Database)
✓ **Triptans** Oral triptans are recommended for acute treatment for all severities of migraine when previous attacks have not been controlled by simple analgesics. If a patient does not respond well to one triptan, a different triptan should be offered for subsequent attacks. For information on oral triptan treatments and dosages, see	SR (G1d, G3, G4, G10)

Recommendation	Evidence Source (Legend on Page 43)
Appendix E:Table E.1: Medications Used for Acute (Symptomatic) Treatment of Migraine.	
After taking a triptan, patients should wait 24 hours before taking a different triptan.	RCT (G7)
Patients with recurrence of their migraine attack after initial relief from a triptan should be advised to take a second dose (within recommended dosage limits) as this is usually an effective strategy.	RCT (G2)
Nasal zolmitriptan 5 mg and nasal sumatriptan 20 mg are recommended for acute treatment for all severities of migraine if previous attacks have not been controlled by simple analgesics. They may be helpful in patients with nausea and where oral triptans have been ineffective.	SR (G2)
Subcutaneous sumatriptan 6 mg should be considered for patients with severe migraine, including those in whom other triptan formulations have been ineffective. It can be particularly helpful where vomiting precludes effective use of the oral route. *Triptans are vasoconstrictors and should be avoided in patients with cardiovascular disease.*	SR (G2)
✓ **Triptan and NSAID Combinations** In patients with an inadequate response to triptans alone, a combination of sumatriptan 50 to 100 mg and naproxen sodium 550 mg may be more effective. This approach may be particularly helpful for patients with prolonged attacks and/or headache recurrence. Although demonstrated only for the sumatriptan-naproxen combination, it might be expected that combinations of naproxen sodium 550 mg (or other NSAIDs) with other triptans in the usual doses would also be helpful.	RCT (G4, G7)
✓ **Antiemetics** Metoclopramide (10 mg up to 4 times per day orally) and domperidone (10 mg up to three times per day) are recommended to treat nausea and potential emesis in migraine. These drugs may improve the absorption of analgesics. *Domperidone has fewer side effects than metoclopramide.*	RCT (G1d, G2)
Metoclopramide or domperidone can be used, if necessary, with acetaminophen, an NSAID, or a triptan to treat migraine-related nausea.	SR (G7), EO (GUC)
✓ **Dihydroergotamine** Dihydroergotamine (DHE) by nasal spray or subcutaneous/intramuscular injection may be considered for patients with attacks of moderate or severe intensity who do not respond well to triptans.	RCT (G1d, G3, G7)

Recommendation	Evidence Source (Legend on Page 43)
X **Ergotamine** Ergotamine is not recommended for routine use in patients with acute migraine, although it may be helpful for selected patients where triptans are not an option. *Because ergotamine is a vasoconstrictor, it should not be used in patients with cerebrovascular or cardiovascular disease.*	SR (G4)
X **Opioids** Opioid analgesics (e.g., codeine, tramadol) and combination analgesics containing opioids are not recommended for routine use for the treatment of migraine because of their potential for causing medication-overuse headache. Opioids may be necessary when other medications are contraindicated or ineffective, or as a rescue medication when the patient's usual medication has failed. Strong opioids (e.g., morphine, butorphanol, oxycodone) should be avoided and used only in exceptional circumstances for the acute treatment of migraine because of the risk of dependence/abuse, potential for developing medication-overuse headache, and the possibility of a withdrawal syndrome following discontinuation. There is a lack of evidence for superiority compared with NSAIDs and triptans. If used, frequency of use should be less than 10 days per month and should be closely monitored with headache diaries. For more information on the use of opioids for chronic non-cancer pain, consult the Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain, endorsed by the College of Physicians and Surgeons of Alberta, available at nationalpaincentre.mcmaster.ca/opioid/.	CS (G4) + RCT (G7) - tramadol RCT (G7) + EO (GDG)
X **Butalbital** The use of butalbital-containing combination analgesics in migraine management should be avoided and limited to exceptional circumstances where other acute medications are contraindicated and/or ineffective. When used, they should be carefully monitored to avoid medication overuse (use on less than 10 days per month), abuse, and dependence. *A severe withdrawal syndrome, including seizures, can occur on discontinuation of high doses.*	RCT (G1d, G7) G (G7)
? **Intranasal Lidocaine** There is insufficient evidence to recommend for or against intranasal lidocaine for the treatment of migraine.	EO (GUC)

Recommendation	Evidence Source (Legend on Page 43)
Pharmacological Prophylactic Therapy	
Background Statement Acute migraine medications are not adequate pharmacotherapy for all patients with migraine, particularly those with frequent migraine attacks. Along with lifestyle modification, trigger management, and behavioural interventions, prophylactic (or preventive) medications can be used to reduce migraine attack frequency. The goal of migraine prophylactic therapy is to reduce migraine attack frequency and migraine-related disability. Treatment is usually considered effective if migraine attack frequency is reduced by 50% or more. Prophylactic therapy requires careful patient follow-up. Standard measurements of headache-related disability, for example, the HIT-6 (www.ihe.ca/research-programs/hta/aagap/headache) or the Migraine Disability Assessment Scale (MIDAS) (www.ihe.ca/research-programs/hta/aagap/headache) may be helpful to monitor the effect of prophylactic therapy. If multiple trials of prophylactic drug monotherapy have not been successful, preventive drug combinations and/or referral to a headache specialist should be considered.	

✓ **Indications for Migraine Preventive Medication**
 	
Consider migraine pharmacological prophylactic therapy in the following situations:
 	
1. Recurrent migraine attacks are causing significant disability despite optimal acute drug therapy. Prophylaxis should be considered for patients with more than three moderate or severe headache days per month when acute medications are not reliably effective. Prophylaxis may also be considered in some patients with less frequent disabling attacks, according to physician judgement and patient preference.
2. The frequency of acute medication use is approaching levels that place the patient at risk for medication-overuse headache:
  ○ Use of acute medication on 10 days a month or more for triptans, ergotamines, opioids, and combination analgesics.
  ○ Use of acute medications on 15 days a month or more for acetaminophen and NSAIDs.
3. Recurrent attacks with prolonged aura are occurring (hemiplegic migraine, migraine with brainstem aura, etc.).
4. Contraindications to acute migraine medications are making symptomatic treatment of individual migraine attacks difficult.
	EO (G8, GDG)

Recommendation	Evidence Source (Legend on Page 43)
✓ **Choosing a Specific Migraine Preventive Medication** A preventive medication should be chosen based on the following: 1. Evidence for efficacy 2. Side effect profile and contraindications 3. Co-existing medical and psychiatric disorders: ○ The number of medications required can be minimized by using migraine preventive drugs which can also treat other disorders that may co-exist with migraine (e.g., anxiety, depression, hypertension, insomnia). ○ Some migraine preventive drugs are contraindicated by co-existing disorders (e.g., flunarizine in depression).	EO (GDG)
✓ **Prescribing a Migraine Preventive Medication** 1. Educate patients on the need to take the medication daily and according to the prescribed frequency and dosage. 2. Ensure that patients have realistic expectations as to what the likely benefits of pharmacological prophylaxis will be. That is: ○ Headache attacks will likely not be abolished completely. ○ A reduction in headache frequency of 50% or more is usually considered worthwhile and successful. ○ It may take four to eight weeks for significant benefit to occur. ○ If the prophylactic drug provides significant benefit in the first two months of therapy, this may increase further over several additional months of therapy. 3. Evaluate the effectiveness of therapy through the use of patient diaries that record headache frequency, drug use, and disability levels. For Headache Diary Sheets, see www.ihe.ca/research-programs/hta/aagap/headache. 4. When starting prophylaxis, evaluate the patient for the presence of acute medication overuse. 5. For most prophylactic drugs, initiate therapy with a low dose and increase the dosage gradually to minimize side effects. 6. Increase the dose until the drug proves effective, until dose-limiting side effects occur, or a target dose is reached. 7. Provide an adequate drug trial. Unless side effects mandate discontinuation, continue the prophylactic drug for at least six to eight weeks after dose titration is completed before considering a drug ineffective. 8. Because migraine attack tendency fluctuates over time, gradual	EO (G3, G4, G8)

Recommendation	Evidence Source (Legend on Page 43)
discontinuation of the drug should be considered for any patients after six to 12 months of successful prophylactic therapy, but preventive medications can be continued for much longer in patients who have experienced significant migraine-related disability. 9. In addition to reduction in the number of days with headache per month, reductions in headache intensity and migraine-related disability need to be considered when judging the effectiveness of prophylactic therapy. 10. Patients on migraine prophylaxis require periodic re-evaluation, both to monitor potential side effects, and to assess efficacy.	
Medications for Episodic Migraine Prophylaxis	
Background Statement A number of drugs have shown efficacy for prophylaxis of episodic migraine (headache on 14 days a month or less). The most widely used migraine prophylactic drugs are the beta-blockers, the tricyclic antidepressants, and topiramate. A number of other drugs are also available, as listed below. Several vitamins, minerals, and herbal compounds with minimal side effects have also shown some evidence of efficacy for episodic migraine prophylaxis. See Appendix E: Table E.2: Medications for Prophylactic Treatment of Migraine for more information on tablet sizes, daily dosage, drug titration, and side effects of medications for migraine prophylaxis.	
✓ **Beta-Blockers** The following beta-blockers are recommended for migraine prophylaxis: • Propranolol 80 to 240 mg daily • Nadolol 80 to 160 mg daily • Metoprolol 100 to 200 mg daily Beta-blockers may be helpful in patients with comorbid anxiety. *Side effects of beta-blockers include fatigue and hypotension. They should be avoided or used with caution in patients with asthma, diabetes, bradycardia, and peripheral vascular disease.*	SR (G2, G4, G8, G10) RCT (G1c, G8) SR (G8) G (G4)
Antidepressants ✓ Amitriptyline is recommended for migraine prophylaxis. • Dosage range 10 to 100 mg daily	RCT (G1c, G2, G4, G10, G11)

Recommendation	Evidence Source (Legend on Page 43)
• To assist with tolerability, should be started at a low dose (10 mg daily is recommended) with the dose being built up slowly (10 mg per week is recommended). The total daily dose is usually given at bedtime or an hour or two before bedtime.	EO (GDG)
• May be preferred in patients with migraine and depression, tension-type headache, insomnia, or anxiety.	G (G4)
• Is contraindicated in patients with angle-closure glaucoma.	
Common side effects are dry mouth and sedation.	
✓ Venlafaxine 75 to 150 mg daily is an alternative to amitriptyline for migraine prophylaxis, although evidence for its efficacy is limited.	RCT (G1c, G2, G4, G8, G10)
✓ Nortriptyline can be considered for migraine prophylaxis. The dosage is similar to that of amitriptyline.	EO (G1a, G8, GUC)
X Selective serotonin reuptake inhibitors are not recommended in the prophylaxis of migraine.	SR (G4, IHE Database)
Antiepileptics	
✓ Topiramate 50 to 200 mg daily (usual target dose 100 mg daily) is recommended for migraine prophylaxis.	SR (G4)
• May be preferred in patients with obesity.	
• Should be started at a low daily dose (25 mg), and the daily dose should be increased slowly (25 mg each week or every two weeks).	EO (GDG)
Can result in a number of side effects including paresthesias, cognitive problems, word finding difficulty, and weight loss.	RCT (G1c)
Should be avoided in patients who are pregnant or those with angle-closure glaucoma.	
Should be avoided or used with caution in patients with a history of renal calculi.	
✓ Divalproex sodium 750 to 1,500 mg daily is recommended for migraine prophylaxis.	SR (G4)
• May be preferred in patients with comorbid depression.	G (G4)
Should be avoided in patients who are pregnant or of child-bearing potential, and in patients with liver disease.	

Recommendation	Evidence Source (Legend on Page 43)
Can result in a number of side effects including hair loss, tremor, and weight gain. *Is associated with serious fetal malformations (neural tube defects) when used during pregnancy.*	RCT (G1a)
X Gabapentin is no longer recommended for episodic migraine prophylaxis. • Additional clinical trial data has become available since the first edition of these guidelines, and these indicate that gabapentin is not useful for prophylaxis of episodic migraine.	SR (IHE Database)
Vitamins, Minerals, and Herbals	
✓ The following vitamins, minerals, and herbal compounds are recommended for migraine prophylaxis. They may have lower efficacy than drug prophylactics (expert opinion), but all have minimal side effects.	
• Riboflavin 400 mg daily	RCT, (G1b, G2, G8, G10, G11)
• Magnesium citrate 300 mg twice a day	RCT (G1b, G8, G10, G11)
• Co-enzyme Q10 100 mg three times a day	RCT (G1b, G2, G8, G10, G11)
X Butterbur (Petasites hybridus) is not recommended for migraine prophylaxis at this time due to inconsistent quality control of many available preparations. • Although there is some evidence for efficacy, the content of the active ingredient (sesquiterpenes) is variable among available preparations, and hepatotoxic pyrrolizidine alkaloids are present in unacceptable amounts in some commercial preparations.	EO (GUC)
X Feverfew is not recommended for migraine prophylaxis.	SR (G4)
Other Medications	
✓ Candesartan 8 mg daily for one week, then 16 mg daily, is recommended for migraine prophylaxis. • May be preferred in patients with hypertension. • Generally has few side effects. *Should be avoided in patients who are pregnant or planning pregnancy.*	RCT (G1c, G2, G8, G10)

Recommendation	Evidence Source (Legend on Page 43)
✓ Lisinopril 10 mg daily for two weeks, then 20 mg daily, can also be used for migraine prophylaxis. • Is less costly than candesartan, but has less evidence for benefit, and may have more side effects. *Contraindications are angioedema and bilateral stenosis of the renal artery.* *Adverse effects include asthenia, hypotension, dry cough, hyperkalemia, gastrointestinal disturbances, and erectile dysfunction.* *Should be avoided in patients who are pregnant or planning pregnancy.*	RCT (G1c,G8, G10) + EO (GUC)
✓ Pizotifen 1.5 to 4 mg daily is recommended for migraine prophylaxis. *Side effects are common and include somnolence and weight gain.*	RCT (G1a, G8)
✓ Flunarizine 10 mg at bedtime is recommended for migraine prophylaxis. • Should not be used in patients with a history of depression. *Side effects are common and include weight gain and depression.*	RCT (G1a, G2, G8, G10)
X OnabotulinumtoxinA (botulinum toxin A) is not recommended for prophylaxis of episodic migraine (headache on 14 days a month or less). • Although effective for chronic migraine, it is no better than placebo for patients with episodic migraine.	SR (G8)
X NSAIDs are not recommended for migraine prophylaxis. • Use on 15 days or more a month may be associated with medication-overuse headache. *Long-term use may be associated with gastrointestinal and renal toxicity.*	EO (GDG, GUC)
? There is insufficient evidence to recommend for or against verapamil for migraine prophylaxis.	RCT (G1c, G8) + EO (GDG)
? There is insufficient evidence to recommend for or against melatonin for migraine prophylaxis.	EO (GUC)

Medications for Chronic Migraine Prophylaxis

Background Statement

Patients with migraine who have headache on 15 days a month or more, with at least eight of these headache days meeting criteria for migraine, are diagnosed as having chronic migraine.

Many of the prophylactic drugs used for episodic migraine are also used in chronic migraine, although there is little evidence for efficacy in chronic migraine for many of them. The two prophylactics with the best evidence for efficacy for chronic migraine are topiramate and onabotulinumtoxinA.

Recommendation	Evidence Source (Legend on Page 43)
✓ OnabotulinumtoxinA (botulinum toxin A) is recommended for prophylaxis of **chronic migraine**. • OnabotulinumtoxinA 155 to 195 units should be injected according to the PREEMPT protocol every three months by clinicians appropriately trained and experienced in its use for chronic migraine.	EO (GDG, GUC) + RCT (G8, G10)
✓ Topiramate is recommended for chronic migraine prophylaxis. (For more details on dosage and titration, see above antiepileptics recommendation for episodic migraine prophylaxis.)	EO (G8, GUC)
✓ Amitriptyline can be considered for prophylaxis of chronic migraine, but has less evidence for efficacy than topiramate or onabotulinumtoxinA. (For more details on dosage and titration, see above antidepressants recommendation for episodic migraine prophylaxis.)	EO (GUC)
? There is insufficient evidence to recommend for or against gabapentin for chronic migraine prophylaxis.	EO (GUC)
Non-Pharmacological Therapy	
Background Statement Many clinical trials have shown efficacy for relaxation training, biofeedback, and cognitive behavioural therapy. While the methodology of these trials can be criticized, the weight of evidence indicates that they are helpful for many patients with migraine. Acupuncture has been shown to reduce migraine frequency and severity compared with wait-list controls. However, studies with a sham acupuncture control have shown sham acupuncture (superficial needling at non-acupuncture points) to be equally effective. There have been several controlled trials of spinal manipulation in migraine, with conflicting results.	
✓ **Relaxation Training, Biofeedback, and Cognitive Behavioural Therapy (CBT)** Consider psychological therapies, including relaxation training, biofeedback, and CBT (alone or in combination), for motivated patients with migraine. These therapies are effective components of stress management training. Recommendations regarding which of these therapies to use for specific patients cannot be made.	SR (G3, G10, IHE Database)
✓ **Acupuncture** Acupuncture can be considered in the prophylactic treatment of patients with migraine. Treatment should consist of at least one to two sessions per week for several (two or more) months, with each treatment lasting approximately 30 minutes.	SR (G4, G11, IHE Database)

Recommendation	Evidence Source (Legend on Page 43)
X **Homeopathy** Homeopathy is not recommended for migraine prophylaxis.	RCT (G2)
? **Hyperbaric oxygen for acute treatment** There is inconclusive evidence to recommend for or against hyperbaric oxygen for acute treatment of migraine attacks or migraine prophylaxis.	RCT (G1b) + SR (IHE Database)
? **Normobaric oxygen for acute treatment** There is insufficient evidence to recommend for or against 100% normobaric oxygen for acute treatment of migraine attacks.	EO (GDG)
? There is inconclusive evidence to recommend for or against using the following interventions for migraine management:	
• Cranial-sacral therapy	SR (IHE Database)
• Spinal manipulation	SR (G4, G10, G11, IHE Database)
• Transcutaneous electrical nerve stimulation (TENS)	SR (G4)
? There is insufficient evidence to recommend for or against using the following interventions for migraine management:	
• Hypnotherapy	RCT (G1)
• Intra-oral acrylic splints	EO (G4)
• Low-level laser therapy	EO (GUC)
• Massage	RCT (G4)
• National Upper Cervical Chiropractic Association (NUCCA) procedure	EO (GUC)
• Single-pulse or repetitive transcranial magnetic stimulation	EO (GUC)
• Transcutaneous supraorbital nerve stimulation	EO (GUC)
Invasive Therapies	
Background Statement Several invasive therapies are sometimes used by specialists for refractory chronic migraine in an attempt to improve patient quality of life when other therapies have failed. Electrical peripheral nerve stimulation, in particular occipital nerve stimulation, has been used, but evidence is limited.	

Recommendation	Evidence Source (Legend on Page 43)
This therapy is invasive, expensive, has limited availability, and has potential for significant side effects related to the surgery. Stimulation lead migration is common and requires additional surgery. This treatment should be limited to clinical trials in specialized centres. Decompression surgery of peripheral nerves in the face and scalp is invasive and puts patients at risk for adverse events; evidence for long-term efficacy for migraine prophylaxis is poor. Most headache experts do not recommend this therapy at this time as more research is needed.	
? **Occipital Nerve Blocks for Migraine** There is insufficient evidence to recommend for or against occipital nerve blocks with local anesthetics for acute therapy of refractory migraine attacks or for migraine prophylaxis.	EO (GUC)
Menstrual Migraines	
Acute Medications	
✓ The acute treatment of menstrual migraine attacks is similar to the acute treatment of non-menstrual migraine attacks. If patients do not respond to simple analgesics (acetaminophen, NSAIDs), a triptan should be used.	RCT (G4) + SR (IHE Database)
Prophylactic Treatments	
Background Statement Patients with severe perimenstrual migraine attacks who do not respond well to the conventional use of acute medications may be considered for standard migraine prophylaxis, particularly if they also have a significant number of migraine attacks at other times during the month. If their attacks are primarily perimenstrual, they may be considered for intermittent short-term monthly migraine prophylaxis if their menstrual periods are regular and predictable enough to allow for proper timing of medication administration. Although intermittent short-term prophylaxis with hormonal agents (e.g., estradiol cream 1.5 mg daily for seven days beginning two days before menstruation or estradiol 100 µg patch used in the same way) or naproxen has been used, short-term prophylaxis with frovatriptan has the best evidence for efficacy and is generally well tolerated.	
✓ **Frovatriptan** For patients with refractory menstrual migraine headache, frovatriptan 2.5 mg twice a day can be considered, with frovatriptan administration starting two days before the anticipated onset of the menstrually-associated migraine attack and continuing for a total of six days.	RCT (G1c, G4) + SR (IHE Database)
✓ **Continuous Use of Oral Contraceptives** In selected patients with menstrual migraine, continuous use of low-dose combination oral contraceptives can be considered, but other treatment options should be tried first. Contraindications and cautions for the use of combined oral contraceptives should be observed (e.g., smoking, migraine with aura).	EO (G7, GUC)

Recommendation	Evidence Source (Legend on Page 43)
Migraine Treatment in Pregnancy	
Background Statement NSAIDs are not teratogenic, but there is some suggestion that NSAIDs may cause an increased risk of spontaneous abortion during the first trimester. NSAIDs, including acetylsalicylic acid, also increase the risk of premature closure of the ductus arteriosus when used during the third trimester. Although there is evidence that sumatriptan does not increase the risk of congenital malformations, an increased risk cannot be completely ruled out. Use of sumatriptan in the second and third trimesters may lead to a slightly increased risk of atonic uterus and blood loss over 500 mL during delivery. Because of potential effects on the fetus, the use of migraine prophylactic drugs during pregnancy should be avoided, where possible. When used, the balance of risks and benefits should be carefully considered. Information on drug safety during pregnancy is constantly evolving. To determine the risk profile of a prophylactic drug during pregnancy, practitioners may find the Motherisk website helpful (www.motherisk.org/women/drugs.jsp). Further advice from Motherisk is available by telephone (416.813.6780).	
Acute Medications	
X Drugs for migraine should be avoided during pregnancy where possible.	EO (G4, G7, GDG)
X Ergot alkaloids should not be used during pregnancy.	EO (G2, G4, G10)
✓ When necessary, acetaminophen 1,000 mg and metoclopramide 10 mg can be used for the treatment of migraine in pregnancy. As with any medication used during pregnancy, acetaminophen should be taken at the lowest effective dose for the shortest time necessary. The total daily dose should not exceed 4,000 mg.	EO (G2, G4, GDG)
✓ Where analgesia beyond acetaminophen is needed, acetaminophen - codeine combination analgesics can be used in pregnancy.	EO (G7, GDG)
✓ Ibuprofen 400 mg can be used for acute migraine attacks during the second trimester of pregnancy. All NSAIDs, including ibuprofen, should be avoided in the third trimester of pregnancy. Other NSAIDs are preferable to ASA because of ASA's long-lasting effects on platelet function.	EO (G4, G7)
✓ Sumatriptan should not be used routinely in pregnancy, but may be considered for use when other medications have failed and the benefits outweigh the risks in patients with vomiting and/or significant disability. Available evidence indicates that the risks of sumatriptan use in pregnancy are minimal. There is much less information or experience available regarding the safety of other triptans during pregnancy.	EO (G2, G4, G7)

Recommendation	Evidence Source (Legend on Page 43)
Antimetics ✓ Metoclopramide is considered safe and may be used in pregnancy for migraine treatment as necessary. X Domperidone should be avoided because of lack of data. ? Although considered safe, there is no good evidence for dimenhydrinate efficacy in migraine-related nausea.	EO (G7)
Prophylactic Treatments	
X Preventive drugs for migraine should be avoided during pregnancy where possible.	EO (GDG, G10)
✓ Preventive drugs for migraine should be gradually discontinued prior to the commencement of a planned pregnancy or should be stopped as soon as possible during an unplanned pregnancy.	EO (GDG)
✓ When it is necessary to continue migraine preventive drugs during pregnancy, obtaining specialist advice should be considered.	EO (GDG)
Migraine Treatment during Lactation	
Acute Medications	
During breastfeeding: ✓ Acetaminophen, metoclopramide, domperidone, dimenhydrinate, and prochlorperazine are all considered safe. ✓ Sumatriptan is considered safe. ✓ Ibuprofen is the NSAID of choice. X Avoid ASA. ✓ If necessary, occasional doses of codeine are considered safe. • Toxicity in the infant has been reported in ultrafast maternal metabolizers. • Avoid repeated use. • Use with caution when the infant is under one month old.	EO (G7)
Prophylactic Treatments	
During breastfeeding: X Migraine preventive drugs should be avoided if possible.	EO (G8, GUC)

Recommendation	Evidence Source (Legend on Page 43)
✓ Magnesium, propranolol, and metroprolol are the preferred choices if prophylaxis is necessary, although amitriptyline can also be considered if these are contraindicated or ineffective.	
Parenteral Treatment of Refractory Migraine	
Background Statement Many medications can be employed for the parenteral treatment of refractory migraine attacks. The medications with the most evidence of efficacy include subcutaneous sumatriptan and IV prochlorperazine, metoclopramide, and chlorpromazine. Based on both evidence for efficacy and potential side effects, metoclopramide or prochlorperazine (with or without prior diphenhydramine), and ketorolac could be considered drugs of first choice for treatment of refractory migraine attacks in the emergency department or similar settings. If the patient has not taken another triptan in the 24 hours prior to presentation, subcutaneous sumatriptan 6 mg could also be considered a drug of first choice. Adequate hydration of the patient is also essential, and a quiet stress-free environment is helpful. For acute treatment of refractory migraine attacks in the emergency department or similar settings, intravenous medications should be used (with the exception of subcutaneous sumatriptan, which may also be a good option). If intravenous administration is not practical, intramuscular administration is an option, although a less desirable one, for many drugs.	
✓ **Hydration** Patients should be rapidly rehydrated intravenously with normal saline 500 to 3,000 mL, depending upon clinical assessment of volume status and medical comorbidities. This is particularly important if neuroleptics are being given for acute treatment in order to prevent hypotension.	EO (GUC)
✓ **Ketorolac IM, IV** Ketorolac 30 mg IV is recommended for refractory migraine attacks. Where IV administration is not feasible, 60 mg may be given IM. If necessary, the IV dose may be repeated in six hours and the IM dose in eight hours. The maximum daily dose is 120 mg in 24 hours.	RCT (G10) + SR (IHE Database) + EO (GUC)
✓ **Metoclopramide IV** Metoclopramide 10 mg IV is recommended. The maximum daily dose is 60 mg. There is evidence that doses of 20 mg and 40 mg of metoclopramide are no more effective than 10 mg. *Side effects include drowsiness (which may be beneficial) and extrapyramidal symptoms, in particular akathisia*. Diphenhydramine 50 mg IV may be given prior to administration of metoclopramide to prevent akathisia, particularly in patients who have shown some evidence of akathisia	EO (G11, GUC)

Recommendation	Evidence Source (Legend on Page 43)
with previous IV metoclopramide use. Whether diphenhydramine should be given routinely in all patients before IV metoclopramide to prevent akathisia is controversial. There is some evidence that this is not helpful.	
✓ **Prochlorperazine IV** Prochlorperazine 10 mg IV is recommended as an alternative to metoclopramide. It may be more effective than metoclopramide. The maximum daily dose is 40 mg. *Side effects include sedation and extrapyramidal side effects, including akathisia*. There is evidence that giving diphenhydramine 50 mg with prochlorperazine 10 mg can reduce the incidence of akathisia.	RCT (G1d, G10) + EO (GUC)
✓ **Chlorpromazine IV** Chlorpromazine 12.5 mg IV (dose may be repeated twice over 1 to 2 hours), although not first line because of potential side effects, may be considered if other treatment options have not been effective. Patients should be given IV hydration prior to therapy. *Side effects include sedation, extrapyramidal symptoms, and hypotension.*	RCT (G1d, G11) + EO (GUC)
✓ **Sumatriptan SC** Sumatriptan 6 mg subcutaneously is recommended if another triptan has not been taken in the past 24 hours. The maximum dose is 12 mg per day. *Triptans are vasoconstrictors and should be avoided in patients with cardiovascular disease*.	RCT (G10) + EO (GUC)
✓ **Dihydroergotamine Mesylate IV** Dihydroergotamine mesylate 1 mg IV can be considered if no contraindications for vasoconstrictor medications exist (e.g., coronary artery disease, previous stroke, or peripheral vascular disease) and other therapies have failed. Prior administration of metoclopramide 10 mg is advisable to prevent nausea. The maximum dose is 2 mg in 24 hours (6 mg/week); the second dose can be given at one hour, if needed. Dihydroergotamine mesylate should not be used within 24 hours of a previous triptan dose. *Side effects include nausea, vomiting, paresthesias, and leg cramps. It is contraindicated in pregnancy.*	NRCS (G11) + EO (GUC)

Recommendation	Evidence Source (Legend on Page 43)
Parenteral Steroids	
✓ Dexamethasone 10 to 24 mg IV (IM is an option) may be considered as an adjunctive therapy to other acute treatments to prevent headache recurrence within 72 hours of treatment, particularly in patients with a previous history of headache recurrence after acute treatment. • The use of steroids for preventing headache recurrence after acute treatment should be limited to a maximum of once per month. *Patients should be warned of potential side effects including the very rare occurrence of avascular necrosis (e.g., hip or humeral).*	NRCS (G11) + EO (GUC)
X IV steroids are not recommended as monotherapy for acute treatment of attacks as the evidence indicates they are not effective for that purpose.	EO (GUC)
X **Parenteral Opioid Analgesics** Parenteral opioid analgesics (e.g., meperidine, morphine) are not recommended for routine use. They are generally not as effective as other available medications and have significant abuse potential. Their use should be restricted to exceptional circumstances (e.g., contraindications to other medications).	EO (G10, GUC)

SECTION 3: MANAGEMENT OF TENSION-TYPE HEADACHE

Recommendation	Evidence Source (Legend on Page 43)
Background Statement	
Episodic tension-type headaches (TTH) (less than 15 days a month) are usually mild to moderate in severity and many patients do not require medication. Information on TTH and reassurance that this is a common headache disorder which is not related to serious underlying disease should be provided to patients. Identification of trigger factors and non-drug treatment may be helpful to patients. Patients with chronic TTH (15 days a month or more) are more likely to require medications including prophylactic therapy. Cyclobenzaprine has also been used for TTH without good supporting evidence. It should be limited to short-term use only. Medication overuse (use of acetaminophen or NSAIDs on 15 or more days a month or opiates on 10 or more days a month) should be avoided. Most medications used for TTH are also used for migraine. For more information on dosages and cautions see Appendix E: Medications for Migraine Headache.	
Self-Management in Tension-Type Headaches	
Background Statement	
In self-management, patients partner with the health professional and take an active role in the management of their headaches. Patients need to develop the skills to: • Self-monitor to identify factors that influence their headache attacks. • Manage headache triggers effectively. • Pace their activity to avoid triggering or exacerbating a headache. • Maintain a lifestyle that does not worsen tension-type headache. • Practice relaxation techniques. • Maintain good sleep hygiene. • Practice stress management skills.	
Acute Pharmacological Therapy	
✓ The following drugs are recommended for the acute treatment of tension-type headache (use on 15 days a month or more should be avoided):	
• Ibuprofen (200 to 400 mg)	RCT (G6)
• Acetylsalicylic acid (500 to 1,000 mg oral)	RCT (G6)

Recommendation	Evidence Source (Legend on Page 43)
• Naproxen sodium (275 to 550 mg) *NSAIDs: gastrointestinal side effects, including bleeding.*	RCT (G6)
• Acetaminophen (500 to 1,000 mg oral) *Less risk of gastrointestinal side effects compared with NSAIDs.*	RCT (G6, G10)
✓ Combination analgesics containing caffeine are drugs of second choice. Combining caffeine (65 to 200 mg) with ibuprofen and acetaminophen increases efficacy, but possibly also the risk for developing medication-overuse headache.	RCT (G6, G10)
X The following drugs are not recommended for routine use in acute treatment of tension-type headache:	
• Muscle relaxants	NR (G6)
• Opioids, including combination analgesics containing codeine	CS (G6)
• Triptans	RCT (G6)
Pharmacological Prophylactic Therapy	
✓ When tension-type headache attacks are frequent, pharmacological prophylaxis can be considered. The efficacy of the preventive drugs is often limited, and treatment may be hampered by side effects. The following drugs are recommended for the prophylactic treatment of tension-type headaches:	
• Drug of first choice: o Amitriptyline (10 to 100 mg daily) *Side effects include dry mouth, drowsiness, dizziness, constipation, and weight gain.*	SR (G4)
• Drugs of second choice:	
o Mirtazapine (30 mg daily) *Side effects include drowsiness and weight gain.*	SR (G6)
o Venlafaxine (150 mg daily) *Side effects include vomiting, nausea, dizziness, and loss of libido.*	RCT (G6)
X OnabotulinumtoxinA (botulinum toxin A) is not recommended for prophylaxis of chronic tension-type headaches.	RCT (G4)

Recommendation	Evidence Source (Legend on Page 43)
Non-Pharmacological Therapy	
✓ **Cognitive Behavioural Therapy (CBT), Biofeedback, and Relaxation Training** CBT, biofeedback, and relaxation training may be considered for patients with frequent tension-type headaches.	EO (GDG)
✓ **Exercise** A therapeutic exercise program, based on an assessment by an appropriately trained health professional, may be considered for patients with tension-type headaches.	SR (IHE Database)
✓ **Acupuncture** Acupuncture may be considered for patients with frequent tension-type headaches.	SR (G6, G10)
? **Spinal Manipulation** There is inconclusive evidence to recommend for or against spinal manipulation for episodic or chronic tension-type headache. Spinal manipulation following pre-manipulative soft tissue therapy provides no added benefit for reducing tension-type headaches.	SR (G9)
? **Manual Traction** There is inconclusive evidence to recommend for or against manual traction for episodic or chronic tension-type headaches.	SR (G9)
? **Hypnotherapy** There is insufficient evidence to recommend for or against hypnotherapy for the treatment of tension-type headaches.	EO (GDG)
? There is inconclusive evidence to make a recommendation for or against using the following interventions for the treatment of tension-type headaches: • Massage • Transcutaneous electrical nerve stimulation (TENS) • Trigger point injections or dry needling	 SR (G4, G10) SR (G4) SR (IHE Database)
? There is insufficient evidence to make a recommendation for or against using the following interventions for the treatment of tension-type headaches: • Cranial-sacral therapy • Low-level laser therapy	 EO (GUC) EO (GUC)

Recommendation	Evidence Source (Legend on Page 43)
• National Upper Cervical Chiropractic Association (NUCCA) procedure	EO (GUC)
Tension-Type Headache Treatment in Pregnancy	
Background Statement Where possible, the use of medication in pregnancy should be avoided, particularly in the first trimester. As tension-type headache does not cause nausea or vomiting, it does not in itself pose a medical risk for the pregnancy. NSAIDs are not teratogenic, but there is some suggestion that NSAIDs may cause an increased risk of spontaneous abortion during the first trimester. NSAIDs, including acetylsalicylic acid, also increase the risk of premature closure of the ductus arteriosus when used during the third trimester. Because of potential effects on the fetus, the use of prophylactic drugs for tension-type headache during pregnancy should be avoided, where possible. When used, the balance of risks and benefits should be carefully considered. Information on drug safety during pregnancy is constantly evolving. To determine the risk profile of a prophylactic drug during pregnancy, practitioners may find the Motherisk website helpful (www.motherisk.org/women/drugs.jsp). Further advice from Motherisk is available by telephone (416.813.6780).	
Acute Medications	
X Drugs for tension-type headaches should be avoided during pregnancy where possible.	EO (G4, G10)
✓ Acetaminophen in a dose of 500 to 1,000 mg is the treatment of choice in pregnant patients with tension-type headaches when headache pain is sufficient to require analgesia. As with any medication used during pregnancy, acetaminophen should be taken at the lowest effective dose for the shortest time necessary. The total daily dose should not exceed 4,000 mg.	EO (G4, G10)
✓ If acetaminophen provides insufficient analgesia, ibuprofen 400 mg can be used in the second trimester of pregnancy. All NSAIDs, including ibuprofen, should be avoided in the third trimester of pregnancy.	EO (G4)
Prophylactic Treatments	
X Preventive drugs for tension-type headaches should be avoided during pregnancy where possible.	EO (GDG)
✓ Preventive drugs for tension-type headaches should be gradually discontinued prior to the commencement of a planned pregnancy or should be stopped as soon as possible during an unplanned pregnancy.	EO (GDG)
✓ Prophylactic treatment for tension-type headaches would only rarely be considered necessary in pregnancy. When necessary, obtaining specialist advice should be considered.	EO (GDG)

SECTION 4: MANAGEMENT OF MEDICATION-OVERUSE HEADACHE

Recommendation	Evidence Source (Legend on Page 43)
Background Statement	
Acute headache medications may worsen a pre-existing headache disorder when taken too frequently (use of triptans, ergots, combination analgesics, or opioid-containing medications on 10 days a month or more, or use of acetaminophen or NSAIDs on 15 days a month or more). Patients with a history of migraine appear especially vulnerable to the development of medication-overuse headache. Careful monitoring of acute medication use by both the patient and the physician is important in the prevention of medication-overuse headache.	
When present in a patient with chronic daily headache (headache on 15 days or more per month for more than three months) medication overuse is not always the cause of the chronic daily headache. Although the patient may have medication overuse, the cause of the chronic daily headache may be chronic migraine, chronic tension-type headache, or another headache disorder. Therefore, cessation of medication overuse will not always result in headache reduction.	
In addition to preventive medications, bridging strategies are sometimes used to reduce headache intensity while patients stop their medication overuse. These involve the short-term use of daily NSAIDs, corticosteroids, or dihydroergotamine while the overused medication is stopped.	
Self-management skills are important for patients with medication-overuse headache. As most patients with medication-overuse headache also have migraine, please refer to Section 2: Management of Migraine Headache for more information on headache self-management skills.	
Prevention and General Approach to Management	
✓ Consider a diagnosis of medication-overuse headache in patients with headache on 15 days a month or more, and assess the patient for possible medication overuse.	EO (GDG)
✓ When medication-overuse headache is suspected, the patient should also be evaluated for the presence of the following: • Psychiatric comorbidities (depression and anxiety); these may need to be considered in planning an overall treatment strategy. • Psychological and physical drug dependence	NRCS (G4)
• Use of inappropriate coping strategies. Medication-overuse behaviour may occur in some patients because they have a limited repertoire of other more adaptive and proactive coping strategies. Rather than relying on medication as a main coping strategy, patients with suspected medication overuse may benefit from training and development of more adaptive self-management strategies (e.g., identification and management of controllable headache triggers, relaxation exercises, effective stress management skills, and activity	EO (GDG)

Recommendation	Evidence Source (Legend on Page 43)
pacing). Expanding patients' repertoire of adaptive coping strategies may help reduce medication use and ultimately improve their headache.	
✓ Patients with frequent migraine or other headache types should use headache diaries that record acute medication intake to monitor their use of acute medications. Refer to the patient information sheet *What You Should Know About Your Medication-Overuse Headache* available at www.ihe.ca/research-programs/hta/aagap/headache, and the Headache Diary Sheets available at www.ihe.ca/research-programs/hta/aagap/headache.	EO (G3)
Treatment	
✓ Treatment plans for the patient with medication overuse headache should include: 1. Patient education with regard to medication-overuse headache. Patients need to understand that: a. Acute medication overuse can increase headache frequency. b. When medication overuse is stopped, headache may worsen temporarily and patients may experience other withdrawal symptoms. c. Many patients will experience a long-term reduction in headache frequency after medication overuse is stopped. d. Prophylactic medications may become more effective. 2. Formulation of a plan for cessation of medication overuse. 3. Provision of a prophylactic medication. 4. A strategy for the treatment of remaining severe headache attacks with limitations on frequency of use (i.e., a triptan for patients with analgesic overuse, dihydroergotamine for patients with triptan overuse, etc.). 5. Patient follow-up and support.	EO (GDG)
✓ **Headache Prophylaxis** Pharmacological prophylaxis should be considered in patients with suspected medication-overuse headache, with the prophylactic medication started prior to or during medication withdrawal. Many migraine prophylactics are used (beta-blockers, tricyclics, and others). However, topiramate (titrated slowly to a target dose of 100 mg daily [see migraine prophylaxis section]) and onabotulinumtoxinA (100 to 200 units injected at intervals of three months given by clinicians experienced in its use for headache) have the best evidence for efficacy in the setting of chronic migraine with medication overuse.	EO (GDG)

Recommendation	Evidence Source (Legend on Page 43)
✓ **Stopping Medication Overuse**	
Withdrawal of the overused medication should be attempted in all patients with suspected medication-overuse headache. For most motivated patients, treatment can be carried out in an outpatient setting. A headache diary should be used to ensure that medication withdrawal targets are being met. Refer to the patient information sheet *What You Should Know About Your Medication-Overuse Headache* available at www.ihe.ca/research-programs/hta/aagap/headache, and the Headache Diary Sheets available at www.ihe.ca/research-programs/hta/aagap/headache.	EO (GDG)
Abrupt withdrawal should be advised for patients with suspected medication-overuse headache caused by simple analgesics (acetaminophen, NSAIDs) or triptans, although gradual withdrawal is also an option.	RCT (G4)
Gradual withdrawal should be advised for patients with suspected medication-overuse headache caused by opioids or opioid-containing analgesics.	NR (G4)

SECTION 5: MANAGEMENT OF CLUSTER HEADACHE

Recommendation	Evidence Source (Legend on Page 43)
General Approach to Management	
Background Statement Cluster headache is uncommon and therapy is complex. Patients with cluster headache should therefore be referred early to specialists for management. The treatment of cluster headache is primarily pharmacologic. Cluster headaches are very intense and patients may benefit from general pain coping strategies. Alcohol may trigger headache attacks and should be avoided by most patients during a headache cluster. Analgesics are usually not helpful for cluster headache and triptans are the treatment of choice. Because cluster headache attacks are short but build up to a very severe intensity quickly, oral medications are usually not satisfactory for acute treatment. Most patients with cluster headaches have very frequent attacks (at least daily) during a cluster. Acute medications are therefore usually not sufficient when used alone, and a prophylactic medication should also be started. For patients with very frequent attacks (more than 2 attacks per day), a transitional medication to stop the headache attacks quickly can also be used at the same time when a prophylactic medication is started. Surgical procedures are not indicated in most patients with cluster headache, but patients with intractable chronic cluster headache should be referred to centres with expertise in neuromodulatory procedures (e.g., occipital nerve stimulation, sphenopalatine ganglion stimulation, or deep brain stimulation) when conventional treatments have failed.	
✓ **Referral** Cluster headache is an uncommon condition and specialist advice should be considered early if the patient is not responding well to therapy or unusual medication doses are required.	EO (GDG)
Acute Therapy for Cluster Headache Attacks	
✓ The following are effective options for the acute treatment of cluster headache attacks:	
• Subcutaneous sumatriptan 6 mg	SR (G10)
• Intranasal zolmitriptan 5 mg or sumatriptan 20 mg	SR (G10)
• 100% oxygen at a rate of 12 litres per minute for 15 minutes through a non-rebreathing mask ○ Caution is recommended in patients with chronic obstructive pulmonary disease (COPD).	RCT (G10)

Recommendation	Evidence Source (Legend on Page 43)
• Oral triptans (zolmitriptan 5 mg) have shown some benefit, but are generally less effective. For more information on triptan use (e.g., maximum daily dose, side effects) see migraine medications Appendix E: Table E.1: Medications Used for Acute (Symptomatic) Treatment of Migraine.	RCT (G5, G10)
Pharmacological Prophylactic Therapy	
For prophylaxis of cluster headache:	
✓ Verapamil 240 to 480 mg daily is recommended as the drug of first choice. • Higher doses can be used if necessary, but when doses above 480 mg are used, electrocardiograms should be done with each dosage increase to monitor for prolonged PR interval and cardiac arrhythmias. *Possible side effects are bradycardia, ankle edema, constipation, gastrointestinal discomfort, gingival hyperplasia, and dull headache.*	RCT (G4, G5, G10)
✓ Lithium (target dose 900 to 1,200 mg daily) is a drug of second choice and is used if verapamil is ineffective or contraindicated. • Blood levels should be monitored to avoid toxicity and to ensure an adequate dose. *The major side effects are thyroid dysfunction, tremor, and renal dysfunction.*	RCT (G10)
✓ Melatonin up to 10 mg daily may be useful in some patients.	RCT (G5)
✓ Topiramate can be considered (target dose 100 to 200 mg daily, with a starting dose of 25 mg daily). *Side effects include cognitive problems, paresthesia, and weight loss*.	NRCS (G5)
Transitional Therapy	
✓ For patients with frequent cluster attacks (several per day), a transitional therapy can be used to stop the attacks quickly while prophylaxis is being established. Options include: • Prednisone (60 mg daily for five days, then reduced by 10 mg every two days until discontinued).	EO (G4)
• Occipital nerve blockade by physicians with appropriate training, given on the side of the headache with lidocaine (1%) and steroids (60 to 80 mg of depot methylprednisolone). Up to three injection cycles can be given over 10 days. *Side effects include local skin atrophy and adverse events related to systemic steroid absorption.*	RCT (G11) + EO (GUC)

SECTION 6: OTHER HEADACHE DISORDERS

Recommendation	Evidence Source (Legend on Page 43)
Background Statement A detailed discussion of the management of other headache disorders is beyond the scope of these guidelines. This section will provide some information on the treatment of patients with hemicrania continua, cervicogenic headache, and headache secondary to temporomandibular disorders. For the diagnosis and investigation of these patients see Section 1: Headache Diagnosis and Investigation. For the management of other headache syndromes not covered in this guideline, specialist referral is recommended.	
Hemicrania Continua	
✓ **Referral** Patients with hemicrania continua require specialist referral.	NR (G4)
Pharmacological Therapy	
✓ Indomethacin (25 mg to 75 mg three times a day) will provide headache relief. *Long-term use of indomethacin is often problematic because of side effects (gastric irritation and bleeding, and renal dysfunction).*	NR (G4)
Cervicogenic Headache	
✓ **Referral** If the headache history and examination of the neck indicates that neck problems may be playing a significant role in the patient's headache, referral to a musculoskeletal therapist or specialist should be considered.	EO (GDG)
Non-Pharmacological Therapy	
✓ **Exercise** A therapeutic exercise program based upon an assessment by an appropriately trained health professional may be considered for the treatment of cervicogenic headache.	SR (IHE Database)
✓ **Deep Neck Flexor Training** Deep neck flexor training (twice daily over six weeks) may be considered for the treatment of cervicogenic headache.	RCT (G9)
✓ **Cervical Spinal Manipulation** Cervical spinal manipulation, defined as the application of high velocity, low amplitude manual thrusts to the spinal joints slightly beyond the passive range of joint motion, may be considered in the management of cervicogenic headache.	SR (G4, G9, IHE Database)

Recommendation	Evidence Source (Legend on Page 43)
✓ **Cervical Spine Mobilization** Cervical spinal mobilization, defined as the application of manual force to the spinal joints within the passive range of joint motion that does not involve a thrust, may be considered in the management of cervicogenic headache.	SR (G4, G9, IHE Database)
? **Massage** There is inconclusive evidence to recommend for or against massage for cervicogenic headache.	SR (IHE Database)
? There is insufficient evidence to make a recommendation for or against using the following interventions for the treatment of cervicogenic headaches:	
• Cranial-sacral therapy	EO (GUC)
• Low-level laser therapy	EO (GUC)
• National Upper Cervical Chiropractic Association (NUCCA) procedure	EO (GUC)
• Trigger point injections/dry needling	EO (GUC)
Headache Secondary to Temporomandibular Disorders	
✓ **Referral** For patients with headache and symptoms and signs of a temporomandibular disorder (TMD), referral to a therapist or specialist in TMD may be appropriate.	EO (GDG)
Non-Pharmacological Therapy	
✓ **Exercise** A therapeutic exercise program based upon an assessment by an appropriately trained health professional may be considered for patients with TMD.	EO (GDG)

APPENDIX A

CATEGORIZATION OF RECOMMENDATIONS

SUMMARY OF CRITERIA TO DETERMINE THE CATEGORIZATION OF RECOMMENDATIONS

Do ✓	• The Guideline Development Group (GDG) or Guideline Update Committee (GUC) accepted the original recommendation (from the seed guideline), which provided a prescriptive direction to perform the action or used the term "effective" to describe it. • The GDG or GUC supplemented a recommendation or created a new one, based on their collective professional opinion, which supported the action. • A supplementary literature search found at least one systematic review presenting consistent evidence to support the action.
Do Not Do X	• The GDG or GUC accepted the original recommendation, which provided a prescriptive direction not to perform the action, used the term "ineffective" to describe it, or stated that the evidence does "not support" it. • The GDG or GUC supplemented a recommendation or created a new one, based on their collective professional opinion, which did not support the action. • A supplementary literature search found at least one systematic review presenting consistent evidence that did not support the action.
Do Not Know ?	• The GDG or GUC accepted the original recommendation, which did not recommend for or against the action or stated that there was "no evidence", "insufficient or conflicting evidence", or "no good evidence" to support its use. • The GDG or GUC supplemented a recommendation or created a new one, based on their collective professional opinion, which was equivocal with respect to supporting the action. • A supplementary literature search found either no systematic reviews ('insufficient evidence to recommend for or against") or at least one systematic review presenting conflicting or equivocal results or stating that the evidence in relation to the action was "limited," "inconclusive," "inconsistent," or "insufficient" ("inconclusive evidence to recommend for or against").

EVIDENCE SOURCE LEGEND

CS: Case Series Study; EO: Expert Opinion; G: Guideline; GDG: Guideline Development Group; GUC: Guideline Update Committee; NR: Narrative Review; NRCS: Non-Randomized Comparative Study; qSR: Quasi-Systematic Review; RCT: Randomized Control Trial; SR: Systematic Review

Refer to Appendix B: Evidence Source

APPENDIX B

EVIDENCE SOURCE

This guideline was developed by a multidisciplinary Guideline Development Group (GDG) and Guideline Update Committee (GUC). Recommendations are based on a review of eleven "seed" guidelines (referenced as G1 to G11; published between 2000 and 2015) and additional systematic reviews, or were created by the GDG or GUC based on their collective professional opinion and an analysis of relevant evidence.

The Evidence Source column of the guideline provides information on the seed guideline(s) that were used to develop the guideline recommendations and the design of the studies referenced by the seed guideline(s) in support of their recommendations. The following evidence sources were considered:

- Systematic review (SR): as cited by the seed guideline(s) or identified from a supplementary literature search required by the GDG or GUC. The literature search spanned from January 2000 until May 2011 for the first edition of this guideline, and from June 2011 to May 2015 for the second edition. A review that does not include a critical appraisal of the included studies was considered a quasi-systematic review (qSR).
- Randomized controlled trial (RCT): as cited by the seed guideline(s).
- Non-randomized comparative study (NRCS): as cited by the seed guideline(s).
- Case series (CS): as cited by the seed guideline(s).
- Guideline (G): as cited by the seed guideline(s).
- Narrative review (NR): as cited by the seed guideline(s).
- Expert opinion (EO) as cited by the seed guideline(s): when no evidence was provided by the seed guideline in support of the recommendation.
- EO (GDG) or EO (GUC): after examining the individual studies cited by the seed guideline(s) or additional SRs on headache, as identified by a supplementary literature search spanning from June 2011 to May 2015 (see above), the original recommendation was rejected and a new one was drafted based on the collective EO of the Ambassador GDG or GUC.

For evidence cited by the seed guideline(s), only the highest level of evidence was listed. For example, when the evidence cited by a seed guideline(s) was from SRs and studies of other design (i.e., qSR, RCT, NRCS, CS, G, or NR) only SR is listed as the source. When no SR was referenced in the seed guideline, the evidence source was indicated in the following order: qSR, RCT, NRCS, CS, G, NR, EO. The same classification for the evidence source was applied when multiple seed guidelines were used to inform one recommendation.

Each recommendation in the Alberta guideline came from one or more seed guidelines or was created by the GDG or GUC, based on their collective professional opinion and an analysis of relevant evidence. The GDG constructed the first edition of the Alberta guideline. Subsequent editions were constructed by the GUC.

The background statements were sourced from the seed guidelines or were created by the GDG or GUC, based on their collective professional opinion and an analysis of relevant evidence referenced by the members of the GDG or GUC, such as recently published systematic reviews not captured by the last update of the IHE Database, or other relevant studies/trials that were not included in the Database.

The references for the "seed" guidelines are available at the end of this document.

APPENDIX C

INTERVENTIONS AND PRACTICES CONSIDERED

Section 1. Headache Diagnosis and Investigations	Section 2. Management of Migraine Headache
Approach to headache diagnosis Headache history Physical examination Screening neurological examination Neck examination Focused neurological examination Examination for temporomandibular disorders Clinical diagnosis Primary headaches Migraine Episodic tension-type headache (TTH) Cluster headache or another trigeminal autonomic cephalalgia Chronic migraine Chronic migraine and medication-overuse headache Chronic TTH Hemicrania continua New daily persistent headache Secondary headaches Cervicogenic headache Post-traumatic headache or persistent headache attributed to head trauma Temporomandibular disorder Diagnosis and neuroimaging in the emergent/urgent setting Emergency red flags Urgent red flags Diagnosis and neuroimaging in the outpatient setting Neuroimaging in typical migraine Atypical headaches and changes in headache pattern Unexplained focal signs in the patient with headache Unusual headache precipitants Unusual aura symptoms Cluster headache and other uncommon primary headache syndromes Late onset headache Persistent headache attributed to head trauma Neuroimaging for patient reassurance Electroencephalography	General approach to management Headache diaries Additional assessment of disability Psychiatric comorbidities Lifestyle and migraine trigger management Lifestyle factors Multimodal multidisciplinary care Specific migraine triggers Acute pharmacological therapy Assessment of the need to change a patient's acute migraine medication Early treatment of migraine attacks Rescue medication Acute medications: NSAIDs and acetaminophen; triptans; triptan and NSAID combinations; antiemetics; dihydroergotamine; ergotamine; opioids; butalbital; intranasal lidocaine Pharmacological prophylactic therapy Indications for migraine preventive medication Choosing a specific migraine preventive medication Prescribing a preventive medication Medications for episodic migraine prophylaxis Beta-blockers: propranolol, nadolol, metoprolol Antidepressants: amitriptyline, venlafaxine, nortriptyline, selective serotonin reuptake inhibitors Antiepileptics: topiramate, divalproex sodium, gabapentin Vitamins, minerals, and herbals: riboflavin, magnesium citrate, co-enzyme Q10, butterbur, feverfew Other medications: candesartan, lisinopril, pizotifen, flunarizine, onabotulinumtoxinA, NSAIDs, verapamil, melatonin Medications for chronic migraine prophylaxis Onabotulinumtoxin A, topiramate, amitriptyline, gabapentin Non-pharmacological therapy Relaxation training, biofeedback, and cognitive behavioural therapy (CBT) Acupuncture Homeopathy Hyperbaric oxygen for acute treatment Normobaric oxygen for acute treatment Cranial-sacral therapy Spinal manipulation Transcutaneous electrical nerve stimulation (TENS) Hypnotherapy Intra-oral acrylic splints Low-level laser therapy Massage National Upper Cervical Chiropractic Association (NUCCA) procedure Single-pulse or repetitive transcranial magnetic stimulation Transcutaneous supraorbital nerve stimulation Invasive therapies Occipital nerve blocks for migraine Menstrual migraine Acute medications Prophylactic treatment Frovatriptan Continuous use of oral contraceptives Migraine treatment in pregnancy Acute medications Prophylactic treatment Migraine treatment during lactation Acute medications Prophylactic treatment Parenteral treatment of refractory migraine: hydration; ketorolac IM, IV; metoclopramide IV; prochlorperazine IV; chlorpromazine IV; sumatriptan SC; dihydroergotamine mesylate IV; parenteral steroids; parenteral opioid analgesics

Section 3. Management of Tension-Type Headache	Section 4. Management of Medication-Overuse Headache
Self-management in TTH Acute pharmacological therapy NSAIDs and acetaminophen Combination analgesics Muscle relaxants Opioids Triptans Pharmacological prophylactic therapy Amitriptyline Mirtazapine and venlafaxine OnabotulinumtoxinA Non-pharmacological therapy CBT, biofeedback, and relaxation training Exercise Acupuncture Spinal manipulation Manual traction Hypnotherapy Massage TENS Trigger point injections or dry needling Cranial-sacral therapy Low level laser therapy NUCCA procedure TTH treatment in pregnancy Acute medications Prophylactic treatment	Prevention and general approach to management Treatment Headache prophylaxis Stopping medication overuse
	Section 5. Management of Cluster Headache
	General approach to management Referral Acute therapy for cluster headache attacks: triptans, oxygen therapy Pharmacological prophylactic therapy: verapamil, lithium, melatonin, topiramate Transitional therapy: prednisone, occipital nerve blockade
	Section 6. Other Headache Disorders
	Hemicrania continua Referral Pharmacological therapy: indomethacin Cervicogenic headache Referral Non-pharmacological therapy: exercise, deep neck flexor training, cervical spinal manipulation, cervical spine mobilization, massage, cranial-sacral therapy, low-level laser therapy, NUCCA procedure, trigger point injections/dry needling Headache secondary to temporomandibular disorders Referral Non-pharmacological therapy: exercise

APPENDIX D

LIST OF REVISIONS

New or Revised Recommendation(s)	Nature of Revision	Final Category*	Page #
Headache Diagnosis and Investigation			
Persistent headache attributed to head trauma	New recommendation	?	10
Management of Migraine Headache			
Multimodal multidisciplinary care	New recommendation	✔	13
NSAIDs and acetaminophen	Additional information	✔	14
Opioids	Additional information	x	15
Intranasal lidocaine	New recommendation	?	17
Indications for migraine preventive medication	Additional information	✔	18
Prescribing a migraine preventive medication	Additional information	✔	19
Migraine prophylaxis (episodic): Gabapentin	Category change from ✔ to x	x	22
Migraine prophylaxis: Butterbur	Category change from ✔ to x	x	22
Migraine prophylaxis: Candesartan	Additional information**	✔	22
Migraine prophylaxis: Lisinopril	New recommendation	✔	23
Migraine prophylaxis (episodic): OnabotulinumtoxinA	New recommendation	x	23
Migraine prophylaxis: Melatonin	New recommendation	?	23
Migraine prophylaxis (chronic): Topiramate	New section/recommendation	✔	24
Migraine prophylaxis (chronic): Amitriptyline	New section/recommendation	✔	24
Migraine prophylaxis (chronic): Gabapentin	New section/recommendation	?	24
Single-pulse or repetitive transcranial magnetic stimulation; Transcutaneous supraorbital nerve stimulation; Cranial-sacral therapy; Low-level laser therapy; NUCCA procedure	New recommendations	?	25
Invasive therapies: Occipital nerve blocks for migraine	New section/recommendation	?	26
Menstrual migraine: Prophylactic treatment: Continuous use of oral contraceptives	New recommendation	✔	26
Migraine treatment in pregnancy: Sumatriptan†	Category change from ? to ✔	✔†	27
Migraine treatment in pregnancy: Metoclopramide	New recommendation	✔	28
Migraine treatment in pregnancy: Domperidone	New recommendation	x	28
Migraine treatment in pregnancy: Dimenhydrinate	New recommendation	?	28
Migraine treatment during lactation	New section/ recommendations	✔/x	28
Parenteral treatment of refractory migraine: Hydration; Ketorolac IM, IV; Metoclopramide IV; Prochlorperazine IV; Chlorpromazine IV; Sumatriptan SC; Dihydroergotamine mesylate IV	New section/recommendations	✔	29
Parenteral treatment of refractory migraine: Steroids to prevent headache recurrence	New section/recommendation	✔	31
Parenteral treatment of refractory migraine: Steroids for acute treatment	New section/recommendation	x	31
Parenteral treatment of refractory migraine: Parenteral opioid analgesics	New section/recommendation	x	31

New or Revised Recommendation(s)	Nature of Revision	Final Category*	Page #
Management of Tension-Type Headache			
Spinal manipulation; Manual traction; Trigger point injections or dry needling; Cranial-sacral therapy; Low-level laser therapy; NUCCA procedure	New recommendations	**?**	34
Management of Cluster Headache			
Transitional therapy: Occipital nerve blockade	New section/recommendation	✔	40
Other Headache Disorders: Cervicogenic Headache			
Deep neck flexor training	New recommendation	✔	41
Massage, Cranial-sacral therapy; Low-level laser therapy; NUCCA procedure; Trigger point injections/dry needling	New recommendations	**?**	42

* ✔ ("Do" category) - indicates that the action should be undertaken; **x** ("Do Not Do" category) - indicates that the action should not be undertaken; **?** ("Do Not Know" category) - indicates that there was either insufficient evidence or a lack of conclusive evidence to make a definitive decision regarding the action. See Appendix A for further information on recommendation categories.

† Sumatriptan is recommended for use in pregnancy only under specific circumstances. See the recommendation for further information.

APPENDIX E

MEDICATIONS FOR MIGRAINE HEADACHE (Adapted from G1 to G8, other sources[1-4])

Table E.1: Medications Used for Acute (Symptomatic) Treatment of Migraine

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
Triptans					
For all triptans: • Limit use to less than 10 days a month to avoid risk of medication-overuse headache • Should not be used in patients who have cerebrovascular, cardiovascular, or peripheral vascular disease • Use with caution in hypertension that is not well controlled and in Raynaud's disease • Safety in pregnancy has not been established, although there is evidence that sumatriptan is relatively safe (*Refer to Section 2: Management of Migraine Headache*) • Should not be combined with ergotamines or other triptans • May be used with SSRIs. Risk of serotonin syndrome may be increased slightly, so patients should be warned of potential symptoms (tachycardia, sweating, myoclonus, tremor, agitation, confusion) • Triptans are especially useful in patients with moderate or severe migraine attacks, particularly in patients where analgesics (NSAIDs, acetaminophen) have failed • Adverse effects for all triptans include: chest discomfort, nausea, distal paresthesias, drowsiness or fatigue, flushing or sensation of warmth on face, neck or jaw					
Almotriptan	Usual dose: 12.5 mg Tablets: 6.25 & 12.5 mg	25 mg	As for all triptans In addition, caution is advised for hepatic or severe renal impairment	As for all triptans	As for all triptans
Eletriptan	Usual dose: 40 mg Tablets: 20 & 40 mg	40 mg	As for all triptans In addition, eletriptan also has drug interactions with clarithromycin, erythromycin, ketoconazole, ritonavir, and related drugs	As for all triptans	As for all triptans
Frovatriptan	Usual dose: 2.5 mg Tablets: 2.5 mg	5 mg	As for all triptans	As for all triptans	As for all triptans

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
Naratriptan	Usual dose: 2.5 mg Tablets: 1 & 2.5 mg	5 mg	As for all triptans	As for all triptans	As for all triptans
Rizatriptan	Usual dose: 10 mg Tablets & wafers (RPD): 5 & 10 mg	20 mg	As for all triptans In addition, reduce rizatriptan dose (use 5 mg dose) for patients using propranolol	As for all triptans	As for all triptans
Sumatriptan	Tablets: 50 & 100 mg Usual dose: 100 mg SC injection: 6 mg Usual dose: 6 mg Packaged as two syringes of 6 mg Nasal spray: 5 & 20 mg Usual dose: 20 mg Packaged as 3 x 2 doses	Tablets: 200 mg SC injection:12 mg Nasal spray: 40 mg	As for all triptans Although safety in pregnancy has not been fully established, the greatest experience with triptan use in pregnancy is with sumatriptan. Teratogenicity has not been detected to date.	As for all triptans	As for all triptans In addition, there may be local reactions with the injectable dosage form or taste perversion with the nasal spray
Zolmitriptan	Tablets & Rapimelts: 2.5 mg Usual dose: 2.5 mg Nasal spray: 2.5 & 5 mg Usual dose: 5 mg Packaged as six single sprays	Tablets, Rapimelts & Nasal spray: 10 mg	As for all triptans	As for all triptans	As for all triptans In addition, local irritation of the nose and taste pervasion may occur with the nasal spray

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
Acetaminophen and NSAIDs					
Acetaminophen	Usual dose: 1,000 mg IR tablets: 325 & 500 mg Suspension: 160 mg/ 5 mL	1,000 mg given tid/qid if necessary Maximum daily dose 4,000 mg	Severe liver dysfunction	Mild to moderate migraine Considered safe in pregnancy	**Limit use to less than 15 days a month to avoid risk of medication-overuse headache**
For all NSAIDs: • Although NSAIDs can be used for migraine attacks of all severities, they are most useful in patients with attacks of mild to moderate severity • To optimize response, use full dose but **limit use to less than 15 days a month to avoid risk of medication-overuse headache** • NSAIDs should be avoided in the last trimester of pregnancy • GI complications may occur early • Risk of GI complications is increased with concurrent use of SSRIs • When used frequently, gastroprotection may be considered and can include either a PPI or misoprostol; PPIs may cause headache (up to 2% occurrence) – consider using ranitidine or famotidine, if headache occurs. NOTE: The histamine receptor antagonists (e.g., ranitidine) are less effective as cytoprotectives • Low dose acetylsalicylic acid negates the cytoprotective advantage of Coxibs • Renal function is equally affected by traditional NSAIDs and Coxibs					
Acetylsalicylic acid (ASA)	Usual dose: 1,000 mg IR tablets: 325 & 500 mg Supp.: 650 mg	1,000 mg up to four times daily	Asthma or peptic ulcer, hypersensitivity to salicylates	Mild to moderate migraine	GI disturbances, hemorrhagic syndrome, hypersensitivity reactions, drowsiness, and tinnitus in select cases
Ibuprofen	Usual dose: 400 mg IR tablets: 200, 300, 400, & 600 mg	400 to 600 mg up to four times daily	As for all NSAIDs	As for all NSAIDs	As for all NSAIDs
Naproxen sodium	Usual dose: 550 mg IR tablets: 220, 275, & 550 mg	550 mg bid	As for all NSAIDs	As for all NSAIDs Preferred to naproxen because of more rapid absorption	As for all NSAIDs

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
Diclofenac potassium	Usual dose: 50 mg IR tablet: 50 mg Powder for oral solution: 50 mg	50 mg bid	As for all NSAIDs	As for all NSAIDs Preferred to diclofenac sodium because of more rapid absorption	As for all NSAIDs
Indomethacin	Usual dose: 50 mg Capsule: 25 & 50 mg Supp.: 50 & 100 mg	50 mg tid-qid Supp.: 100 mg bid	As for all NSAIDs	As for all NSAIDs	As for all NSAIDs
Ergot Alkaloids					
Ergotamine	Usual dose: 2 mg initially, then 1 tablet every 30 minutes until relief obtained Note: Ergotamine tablets may not be available in Canada, and specialty pharmacy compounding may be required.	Maximum of six tablets daily, 10 tablets per week	Should not be used in patients who have cerebrovascular, cardiovascular, or peripheral vascular disease. Contraindicated in pregnancy	Moderate or severe migraine attacks not responsive to NSAIDs or triptans, or where use of triptans is not feasible	May cause side effects such as nausea, vomiting, abdominal pain, and muscular cramps Limit use to less than 10 days a month to avoid risk of medication-overuse headache
Dihydroergotamine	Injection: Usual dose: 0.5 to 1 mg SC Formulation: 1 mg ampoules, boxes of 3 and 5 Nasal spray: Usual dose: 1 spray (0.5 mg) in each nostril, repeated in 15 minutes (not all the drug is absorbed)	Injection: Up to 3 mg daily For regular use maximum dose is 6 mg per week Nasal spray: Dosing up to two times daily (eight sprays, two bottles)	As above	As above	As above The dose should be reduced or the drug discontinued if leg cramps or numbness, coldness, and tingling in the extremities occur

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
	Formulation: Each bottle contains four sprays Note: Oral formulations are not available	For regular use, up to six doses per week			
Antiemetics					
Metoclopramide	Usual dose: 10 mg Tablets: 5 & 10 mg Injection: 5 mg/mL Note: May be combined with acetaminophen, NSAIDs, and triptans	Oral: 10 mg qid Intravenous: 10 mg TID	Patients at risk for extrapyramidal side effects Possible GI obstruction	Patients who might benefit from improved gastric motility	Dose related drowsiness or fatigue, diarrhea, hyperprolactinemia, akathesia, and other extrapyramidal side effects Risk of extrapyramidal side effects is increased with intravenous use or higher oral doses Risk of tardive dyskinesia with frequent and long-term use
Domperidone	Usual dose: 10 mg Tablets: 10 mg Note: May be combined with acetaminophen, NSAIDs, and triptans	10 mg up to three times daily	Possible GI obstruction	Patients who might benefit from improved gastric motility	Possible dry mouth, abdominal cramps, diarrhea, and hyperprolactinemia Domperidone enters the CNS less than metoclopramide, and therefore has fewer CNS side effects In higher doses, may cause QT interval

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
					prolongation
Prochlorperazine	Usual dose: 10 mg Tablets: 5 and 10 mg Injection: 5 mg/mL (2 mL vials) Supp.: 10 mg	5 to 10 mg q6-8h prn PO 5 to 10 mg q8-12h prn IM, IV 10 mg q8h rectally	Patients at risk for extrapyramidal side effects and the elderly	Poor response to domperidone or metoclopramide	Anticholinergic effects, akathesia, and other extrapyramidal side effects May cause drowsiness, dizziness, and additive sedation with other CNS depressants
Opioids Should not be used routinely or first-line for migraine. Ongoing surveillance for escalating doses is recommended. Patients should limit use in migraine to less than 10 days per month to avoid risk of medication-overuse headache.					
Codeine	Usual dose: 60 mg IR tablets: 15 & 30 mg (with or without acetaminophen or ASA); 60 mg with acetaminophen	30 to 60 mg every 3 to 4 hours	Codeine non-responders: 10% of patients may not respond to codeine (re: lack of conversion to morphine)	Patients not responsive to NSAIDs and triptans, or patients in whom these medications are contraindicated May also be considered as a rescue medication for occasional use when the patient's regular medication has failed Intermittent use of codeine is considered relatively safe (in terms of teratogenicity) in pregnancy	Common side effects (more frequent with prolonged use and/or high dose) include dizziness, drowsiness, nausea/vomiting, vertigo, blurred vision, nervousness, pruritis, dry mouth, headache, sexual dysfunction, loss of appetite, fatigue, insomnia, sweating, confusion, constipation, edema, difficulty urinating, restless legs, anxiety, and weakness Physical dependence and risk of addiction with frequent use

Class/drug	Usual dose and available formulations	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patients with:	Adverse effects
Tramadol	Typical dosing: 37.5 to 100 mg up to qid IR tablets: 37.5 mg (in combination with acetaminophen 325 mg) & 50 mg	Maximum recommended dose of 400 mg/24 hrs	Possible loss of analgesia if used concurrently with high doses of strong opioids Use with caution in patients concurrently receiving TCAs, SNRIs or SSRIs	As above	Dizziness, nausea/vomiting, pruritis, constipation, headache, anxiety, somnolence, nervousness, and some potential for abuse

Table E.2: Medications Used for Prophylactic Treatment of Migraine

Class/drug and tablet sizes	Usual starting dose & titration	Recommended target dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Antidepressants					
TCAs: Amitriptyline or nortriptyline Note: nortriptyline may be substituted for amitriptyline (expert consensus) Tablets: Amitriptyline: 10, 25, 50, & 75 mg Capsules: Nortriptyline: 10 & 25 mg	10 mg hs (1 to 2 hrs before bedtime); ↑ by 10 mg/week Nortriptyline may ↑ slightly faster (every 3 or 4 days if needed)	10 to 50 mg daily (bedtime); up to 100 mg daily may be used, if needed & tolerated	Heart block, significant cardiovascular disease, urinary retention, uncontrolled glaucoma (particularly angle closure type), prostate disease, mania	Insomnia, depression, anxiety, neuropathic pain, comorbid tension-type headache	Weight gain, drowsiness, confusion, anticholinergic effects (dry mouth, constipation), decreased seizure threshold, sexual dysfunction, and cardiovascular effects
SNRIs: Venlafaxine extended release ER capsules: Venlafaxine 37.5, 75, & 150 mg	37.5 mg once daily for 1 week; ↑ by 37.5 mg/week (may ↑ by 75 mg/week, if necessary)	150 mg/day (once daily) Up to 225 mg daily can be used	Hypertension, kidney failure	Depression, anxiety	Nausea/vomiting, sexual dysfunction, drowsiness, dizziness, blurred vision, and 'flat' affect
Antiepileptics					
Divalproex sodium	250 mg daily for 1 week; ↑ to 250 mg bid	750 to 1,500 mg daily (divided bid)	Liver disease, bleeding disorders,	Epilepsy, mania, anxiety, comorbid	Nausea/vomiting, tremor, weight gain,

Class/drug and tablet sizes	Usual starting dose & titration	Recommended target dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Tablets: 125, 250, & 500 mg	for 1 week; 250 mg in am and 500 mg at bedtime for 1 week; 500 mg in am & 500 mg at bedtime; ↑ to 1,500 mg daily, if needed		alcoholism, obesity Should be avoided in pregnancy (human teratogen)	depression	alopecia, increased hepatic enzymes, and neural tube defects (if used during pregnancy)
Topiramate Tablets: 25, 100, & 200 mg Sprinkle capsules: 15 & 25 mg	25 mg daily for 1 week; 25 mg bid for 1 week; ↑ by 25 mg/week (or every 2 weeks) up to 50 mg BID; or 15 mg/week increments can be used	50 mg BID or 100 mg daily (at bedtime); up to 200 mg daily may be used, if needed & tolerated	Kidney stones, kidney failure, angle closure glaucoma. Use with caution in depression and in patients with cognitive concerns Avoid in pregnancy Use caution if combined with valproic acid – risk of encephalopathy	Epilepsy, obesity, mania, anxiety, essential tremor, alcohol dependence	Gastrointestinal (nausea, anorexia); renal calculi, paresthesias, acute glaucoma, CNS (dizziness, tremor, sedation, cognitive impairment, depression), weight loss, and metabolic acidosis
Antihypertensives and Other Calcium Channel Blockers					
Beta-blockers					
Propranolol Tablets: IR: 10, 20, 40, & 80 mg ER capsules: 60, 80, 120 & 160 mg	20 to 40 mg bid; ↑ by 40 mg/week	80 to 240 mg daily (divided bid or ER form once daily)	Asthma, heart block, CHF, hypotension, bradycardia, Raynaud's, peripheral vascular disease, insulin-dependent diabetes, sexual dysfunction	Hypertension, angina, comorbid anxiety	Fatigue, reduced exercise tolerance, bradycardia, CHF, hypotension, bronchospasm, impotence, and sleep disturbance

Class/drug and tablet sizes	Usual starting dose & titration	Recommended target dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Nadolol Tablets: 40, 80, & 160 mg	20 to 40 mg/day (morning); ↑ 20 to 40 mg/week	80 to 160 mg/day (once daily)	See propranolol Avoid while breastfeeding	See propranolol	See propranolol; may have fewer CNS side effects
Metoprolol Tablets: IR: 25, 50, & 100 mg SR: 100 & 200 mg	50 mg BID	100 to 200 mg daily (divided bid or sr form once daily)	See propranolol	See propranolol	See propranolol
Calcium Channel Blockers					
Flunarizine Capsules: 5 mg	5 to 10 mg daily (at bedtime)	10 mg daily (at bedtime)	Depression, Parkinson's	Dizziness, vertigo	Weight gain, blurred vision, depression, drowsiness, and extrapyramidal effects (rare)
Verapamil Tablets: IR: 80 & 120 mg SR: 120, 180, & 240 mg (poor evidence for efficacy)	40 or 80 mg bid for 1 week; ↑ by 40 to 80 mg weekly SR: start with 160 mg daily for 1 week; ↑ to 240 mg daily	240 mg daily (regular tablets: divided tid; sr: divided bid); doses > 480 mg daily not recommended for migraine	Constipation, hypotension, severe CHF, bradycardia, heart block, arrhythmias, beta-blocker use, severe renal failure	Hypertension, angina	Constipation, peripheral edema, and AV conduction disturbances
ACEIs/ARBs					
Candesartan Tablets: 4, 8, 16, & 32 mg	8 mg daily, ↑ to 16 mg daily in 1 week (once daily)	16 mg/day (once daily)	Hypotension, avoid during pregnancy or if planning pregnancy	Hypertension	Hypotension, dizziness
Lisinopril Tablets: 5, 10, & 20 mg	10 mg/day (once daily) for 2 weeks, then 20 mg/day	20 mg/day (once daily)	Hypotension, angioedema and bilateral stenosis of the renal artery, avoid during pregnancy or if planning pregnancy	Hypertension	Hypotension, dizziness, fatigue, asthenia, non-productive cough, angioedema (rare), hyperkalemia, gastrointestinal disturbances, and

Class/drug and tablet sizes	Usual starting dose & titration	Recommended target dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
					erectile dysfunction
Serotonin Antagonists					
Pizotifen (pizotyline) Tablets: 0.5 & 1 mg	0.5 mg at bedtime for 1 week; 0.5 mg bid for 1 week; 0.5 mg TID, ↑ up to 4 mg daily, if needed	1.5 to 4 mg daily (1 mg bid is good target); full dose can be given at bedtime	Obesity	Insomnia	Drowsiness, weight gain, and muscle pain/cramps
Vitamins/Minerals/Herbals (less efficacy than pharmaceutical prophylactics but minimal side effects – expert opinion only)					
Coenzyme Q10 Multiple formulations available (1 to 120 mg)	100 mg tid	300 mg daily (100 mg tid to minimize GI adverse effects)	Hypotension	Hypertension	GI upset
Magnesium citrate Capsules: 150 mg Tablets: 200 mg	300 mg (elemental magnesium) bid	300 mg (elemental magnesium) bid	Kidney failure, diarrhea	Constipation	Diarrhea, GI upset
Riboflavin Tablets: 100 mg	400 mg/day (or 200 mg bid)	400 mg/day (once daily or divided bid)	Contemplating pregnancy or pregnant – considered to have teratogenic risk at high dose		Yellow urine

Class/drug and tablet sizes	Usual starting dose & titration	Recommended target dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Other Compounds					
OnabotulinumtoxinA (botulinum toxin A) For chronic migraine only (headache on ≥ 15 days per month) (Special expertise required for administration) Vials: 50, 100, and 200 Units	155 to 195 Units IM to multiple sites in the head and neck as per injection protocol (5 units per site)	Total of 155 to 195 units IM; can be repeated every 12 weeks if necessary	Pre-existing dysphagia, breathing difficulties or muscle weakness, and myasthenia gravis or other neuromuscular transmission disorder	Chronic migraine only	Neck pain, neck weakness. Brow ptosis may occur, and require adjustment in dosing. Lid ptosis and dysphagia may occur, but are very uncommon

Table E.3: Medications Used for Parenteral Treatment of Refractory Migraine (Adapted from G1d, G10, G11, other sources[1])

Drug	Usual dose	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Antidepressants					
Metoclopramide IV	Usual dose: 10 mg	60 mg	Patients at risk for extrapyramidal side effects Possible GI obstruction	Patients who might benefit from improved gastric motility	Drowsiness (which may be beneficial) and extrapyramidal symptoms, in particular akathisia.
Prochlorperazine IV	Usual dose: 10 mg	40 mg	The elderly and other patients at risk for extrapyramidal side effects		Sedation and extrapyramidal side effects, including akathisia
Ketorolac IM, IV	Usual dose: 30 mg IV repeated in 6 hours if needed. 60 mg IM repeated in 8 hours if IV not feasible	120 mg	Previous GI bleed and/or multiple risk factors that increase risk of GI bleed		Dyspepsia, dizziness

Drug	Usual dose	Maximum daily dose	Avoid or use with caution for patients with:	May be preferred in patient with:	Adverse effects
Sumatriptan SC	Usual dose: 6 mg Packaged as two syringes of 6 mg	12 mg	Avoid in patients who have taken another triptan in the past 24 hours, and in patients with cerebrovascular, cardiovascular, or peripheral vascular disease or uncontrolled hypertension.		Chest discomfort, nausea, distal paresthesias, drowsiness or fatigue, flushing or sensation of warmth on face, neck, or jaw Local injection site reactions may occur
Dihydroergotamine mesylate IV	Usual dose: 1 mg	2 mg	Should not be used in patients who have cerebrovascular, cardiovascular, or peripheral vascular disease. Avoid in uncontrolled hypertension Contraindicated in pregnancy Should not be used within 24 hours of a previous triptan dose		Nausea, vomiting, paresthesias, and leg cramps
Chlorpromazine IV	Usual dose: 12.5 mg repeated twice over 1-2 hours (ensure good patient hydration before using)	75 mg	The elderly and other patients at risk for extrapyramidal side effects	May be useful when first-line treatments have failed	Sedation, extrapyramidal symptoms, and hypotension
Diphenhydramine IV (as an adjunct for prochlorperazine and metoclopramide)	Usual dose: 50 mg	400 mg	Benign prostatic hyperplasia, chronic pulmonary disease, hepatic impairment, seizures	Prior to use of prochlorperazine or metoclopramide if patients have history of akathisia with previous use.	Sedation, tachycardia
Dexamethasone IV (for prevention of migraine recurrence after use of other acute parenteral therapy)	Usual dose: 10 to 24 mg (for occasional use only)		Monitor patients with diabetes for hyperglycemia	A history of headache recurrence after parenteral therapy of refractory attacks	Avascular necrosis (rare)

Reference ER headache guidelines for more information: Orr SL, Aubé M, Becker WJ, Davenport WJ, Dilli E, Dodick D, et al. Canadian Headache Society systematic review and recommendations on the treatment of migraine pain in emergency settings. *Cephalalgia* 2015;35(3):271-84; Orr SL, Friedman BW, Christie S, Minen MT, Bamford C, Kelley NE, et al. Management of adults with acute migraine in the emergency department: The American Headache Society evidence assessment of parenteral pharmacotherapies. *Headache* 2016;56(6):911-40.

ABBREVIATIONS:

ACEI: angiotensin-converting-enzyme inhibitor
ARBs: angiotensin receptor blockers
AV: atrioventricular
bid: twice daily
CHF: congestive heart failure
CNS: central nervous system
ER: extended release
GI: gastrointestinal
h(rs): hour(s)
hs: at bedtime
IM: intramuscular
IR: immediate release
IV: intravenous
mg: milligram
NSAID: non-steroidal anti-inflammatory drug
PO: to be taken by mouth
PPI: proton-pump inhibitor
PRN: when (as) required
q8h: to be taken every 8 hours
qid: four times daily
RPD: rapidly disintegrating tablet
SC: subcutaneous
SNRI: serotonin norepinephrine reuptake inhibitor
SR: sustained release
SSRI: selective serotonin reuptake inhibitor
Supp.: suppository
TCA: tricyclic antidepressant
tid: three times daily

APPENDIX F

RESOURCES AND TOOLS

The following resources and tools can be downloaded from or accessed from the TOP website, www.topalbertadoctors.org/cpgs/10065, or the IHE website, www.ihe.ca/research-programs/hta/aagap/headache.

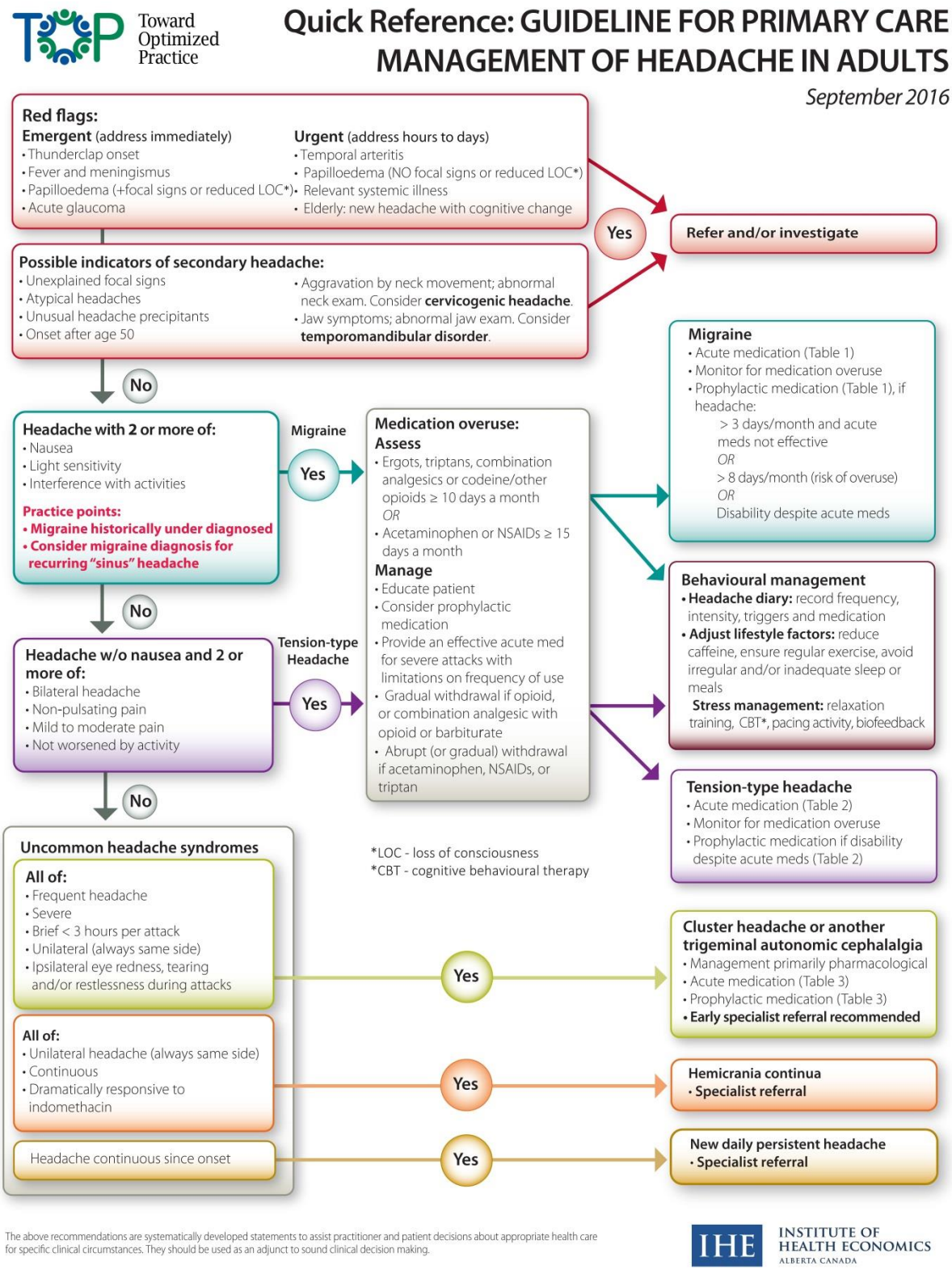
For Clinicians

- Guideline for Primary Care Management of Headache in Adults (full guideline)
- Quick Reference Guide (algorithm, medication table and key messages)
- Headache Diary Sheets
- Headache History Guide
- *Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain*, endorsed by the College of Physicians and Surgeons of Alberta[5]
- Headache disability measures (scales)
  - Headache Impact Test (HIT-6)[6]
  - Migraine Disability Assessment Scale (MIDAS)[7]
- Instructional videos:
  - Temporomandibular and Neck Exam[8]
  - Neurological Exam[9]
- Guideline background document (coming soon, to www.ihe.ca/research-programs/hta/aagap/headache)
- HeadachePro pathway tool, an app developed by Alberta Health Services and based on this guideline

For Patients

- Patient information sheets and brochure
  - Brochure: *What You Should Know About Your Headache*
  - Information sheets:
    - *What You Should Know About Your Headache*
    - *What You Should Know About Headache Self-Management*
    - *What You Should Know About Your Migraine Headache*
    - *What You Should Know About Migraine Preventive Medications*
    - *What You Should Know About Your Headache During Pregnancy and Breastfeeding*
    - *What You Should Know About Your Tension-Type Headache*
    - *What You Should Know About Your Medication-Overuse Headache*
- Food Triggers, Caffeine, and Migraine Attacks
- Website resources for more information on migraines
  - Canadian Headache Society: www.migrainecanada.org
  - American Migraine Foundation: www.americanmigrainefoundation.org

QUICK REFERENCE ALGORITHM



QUICK REFERENCE MEDICATIONS

Quick Reference: MEDICATIONS RECOMMENDED FOR HEADACHE MANAGEMENT IN ADULTS

Refer to full guideline for migraine treatment in pregnancy and lactation

Table 1: Migraine

Acute Migraine Medication	
1st line	ibuprofen 400 mg, ASA 1,000 mg, naproxen sodium 550 mg, acetaminophen 1,000 mg, diclofenac 50 mg
2nd line	Triptans: oral sumatriptan 100 mg, rizatriptan 10 mg, almotriptan 12.5 mg, zolmitriptan 2.5 mg eletriptan 40 mg, frovatriptan 2.5 mg, naratriptan 2.5 mg ▪ Subcutaneous sumatriptan 6 mg if vomiting early in the attack. Consider for attacks resistant to oral triptans. ▪ Oral wafer: rizatriptan 10 mg, zolmitriptan 2.5 mg, if fluid ingestion worsens nausea ▪ Nasal spray: zolmitriptan 5 mg, sumatriptan 20 mg, if nausea Antiemetics: domperidone 10 mg, metoclopramide 10 mg, for nausea
3rd line	550 mg naproxen sodium in combination with triptan
4th line	Fixed-dose combination analgesics (with codeine if necessary - not recommended for routine use)

Prophylactic Migraine Medication		Starting Dose	*Titration: Daily Dose Increase	Target Dose / Therapeutic Range	Notes
1st line	propranolol	20 mg bid	40 mg/week	40-120 mg bid	Avoid in asthma
	metoprolol	50 mg bid	50 mg/week	50-100 mg bid	
	nadolol	20-40 mg once daily	20 mg/week	80-160 mg daily	
	amitriptyline	10 mg hs	10 mg/week	10-100 mg hs	Consider if depression, anxiety, insomnia or tension-type headache
	nortriptyline	10 mg hs	10 mg week	10-100 mg hs	
2nd line	topiramate	25 mg once daily	25 mg/week	50 mg bid	Consider 1st line if overweight
	candesartan	8 mg once daily	8 mg/week	16 mg once daily	Few side effects; avoid in pregnancy or when pregnancy is planned
	lisinopril	10 mg once daily	10 mg/week	20 mg once daily	More side effects than candesartan; avoid in pregnancy or when pregnancy is planned
Other	divalproex sodium	250 mg once daily	250 mg/week	750-1,500 mg daily, divided bid	Avoid in pregnancy or when pregnancy is planned
	pizotifen	0.5 mg daily	0.5 mg/week	1-2 mg bid	Monitor for somnolence and weight gain
	OnabotulinumtoxinA	155-195 units	No titration needed	155-195 units every 3 months	For chronic migraine only – headache on ≥15 days per month
	flunarizine	5-10 mg hs		10 mg hs	Avoid in depression
	venlafaxine	37.5 mg once daily	37.5 mg/week	150 mg once daily	Consider in migraine with depression and/or anxiety
Over the Counter	magnesium citrate	300 mg bid	No titration needed	300 mg bid	Efficacy may be limited; few side effects
	riboflavin	400 mg daily		400 mg daily	
	co-enzyme Q10	100 mg tid		100 mg tid	

*Titration: Dosage may be increased every two weeks to avoid side effects

- For most drugs, slowly increase to target dose
- Therapeutic trial requires several months
- Expected outcome is reduction, not elimination of attacks
- If target dose not tolerated, try lower dose
- If med effective and tolerated, continue for at least six months
- If several preventive drugs fail, consider specialist referral

Table 2: Tension-Type Headache

Acute Medication	
▪ ibuprofen 400 mg ▪ ASA 1,000 mg ▪ naproxen sodium 550 mg • acetaminophen 1,000 mg	
Prophylactic Medication	
1st line	amitriptyline 10-100 mg hs *OR* nortriptyline 10-100 mg hs
2nd line	mirtazapine 30 mg hs *OR* venlafaxine 150 mg once daily

Table 3: Cluster Headache (consider early specialist referral)

Acute Medication	
▪ subcutaneous sumatriptan 6 mg ▪ intranasal zolmitriptan 5 mg or sumitriptan 20 mg *OR* 100% oxygen at 12 litres/minute for 15 minutes through non-rebreathing mask	
***Prophylactic Medication**	
1st line	verapamil 240-480 mg per day (higher doses may be required)
2nd line	lithium 900-1,200 mg per day
Other	topiramate 100-200 mg per day *OR* melatonin up to 10 mg hs

***Note**: If more than two attacks per day, consider transitional therapy while verapamil is built up (e.g., prednisone 60 mg for five days, then reduced by 10 mg every two days until discontinued, or occipital nerve blockage with steroids by trained physicians).

Abbreviations: **hs** – at bedtime; **bid** – twice a day; **tid** – three times a day

September 2016

INSTITUTE OF HEALTH ECONOMICS ALBERTA CANADA

QUICK REFERENCE KEY MESSAGES

DIAGNOSIS AND IMAGING

- Rule out secondary headache when making a diagnosis of a primary headache disorder.
- Neuroimaging is not indicated in patients with recurrent headache with the clinical features of migraine, a normal neurological examination, and no red flags.
- Neuroimaging, sinus X-rays, cervical spine X-rays, and EEG are not recommended for the routine assessment of the patient with headache. History and physical/neurological examination is usually sufficient to make a diagnosis of migraine or tension-type headache.

DIFFERENTIAL DIAGNOSIS

- Migraine is by far the most common headache type in patients seeking help for headache from physicians.
- Migraine is historically under-diagnosed and under-treated. Many patients with migraine are not diagnosed with migraine when they consult a physician.
- Migraine should be considered in patients with recurrent moderate or severe headaches and a normal neurological examination.
- Patients consulting for bilateral headaches which interfere with their activities are likely to have migraine rather than tension-type headache and may require migraine specific medication.
- Consider a diagnosis of migraine in patients with a previous diagnosis of recurring “sinus” headache.
- Monitor for medication overuse.
- Medication overuse is considered present when patients with migraine or tension-type headache use combination analgesics, opioids, or triptans on 10 or more days per month or acetaminophen or NSAIDs on 15 or more days a month.

MANAGING MIGRAINE

- Comprehensive migraine therapy includes management of lifestyle factors and triggers, acute and prophylactic medications, and migraine self-management strategies.
- ASA, acetaminophen, NSAIDs, and triptans are the primary medications for acute migraine treatment.
- A triptan should be used when NSAIDs are not effective.
- Opioid-containing analgesics are not recommended for routine use for migraine.
- Butalbital-containing combination analgesics should be avoided.
- Vast amounts of over-the-counter analgesics are taken for headache disorders and treatment is often sub-optimal.
- A substantial number of people who might benefit from prophylactic therapy do not receive it.

**Refer to Guideline for Primary Care Management of Headache in Adults 2nd edition, for management details: www.topalbertadoctors.org/cpgs/10065*

HEADACHE HISTORY GUIDE (SOURCE: EO [GDG])

HEADACHE HISTORY GUIDE	Assessed by:	Date:
Name:	DOB: / /	Chart ID:

PAIN:

Site/Radiation/Intensity/Effect of headaches on work and family/Associated symptoms:

***Some associated symptoms**:*

- □ *Nausea and/or vomiting*
- □ *Photophobia*
- □ *Phonophobia*
- □ *Osmophobia*
- □ *Aura*
- □ *Autonomic changes*
- □ *Jaw pain/dysfunction*
- □ *Neck pain/injury*

ONSET, pattern of progression, reasons for consulting now:

DURATION:

Under 3 hours, over 4 hours/Continuous/Intermittent/Frequency- days per month or week (review headache diaries if available):

AGGRAVATING FACTORS/TRIGGERS:

- ☐ Exertion
- ☐ Postural changes
- ☐ Valsalva/cough/straining
- ☐ Stress
- ☐ Other

Clinical Red Flags

(see Guideline):

Emergent (address immediately)

- □ Thunderclap headache
- □ Fever and neck stiffness (meningismus)
- □ Papilloedema + focal signs and/or reduced loss of consciousness
- □ Acute angle-closure glaucoma

Urgent (address hours to days)

- □ Systemic illness in the patient with a new onset headache
- □ Papilloedema in an alert patient without focal neurological signs
- □ Over age 50 with other symptoms suggestive of temporal arteritis
- □ New headache with recent cognitive change in the elderly

EASING FACTORS:

SLEEP/INSOMNIA	MOOD	
Initial *(prolonged time to fall asleep)*:	**Do you think you are depressed?** Yes ☐ No ☐	**If suicidal**: Do you feel life is not worth living? Have you made any plans? Have you felt like acting these out? Do you feel unsafe?
Secondary *(waking during the night)*:		
Tertiary *(spontaneous early waking; flag for depression):*	**Would you describe yourself as anxious?** Yes ☐ No ☐	
Parasomnias *(restless legs, snoring, apneas, night terrors):*		

PREVIOUS INVESTIGATIONS: *Blood tests/X-rays/Scans Patient's perception of findings/response:*	CONSULTS:

PREVIOUS TREATMENTS FOR PAIN AND OUTCOME: *Meds/Physio/Acupuncture/TENS/Surgery:*

PAST MEDICAL HISTORY:	ALLERGIES/INTOLERANCES:
☐ **Hypertension** ☐ other: ☐ **Heart disease** ☐ **Stroke** **FAMILY HISTORY OF HEADACHE:**	☐ **Asthma**

CURRENT PAIN MEDICATIONS *(review diaries if available)*:	NON PAIN MEDICATIONS:

PENDING INVESTIGATIONS:	
SOCIAL HISTORY:	
	☐ family violence (past, current) ☐ high stress ☐ smoking ☐ ETOH ☐ Street drugs ☐ Fam hx substance abuse
WORK/BENEFITS/LEGAL CLAIMS:	**DISABILITY DUE TO HEADACHE:**
	(Work, family, relationships, leisure activities)
PATIENT'S PERCEPTION OF PAIN PROBLEM:	**Problem list/diagnoses**
PATIENT'S EXPECTATIONS OF TREATMENT	**Plan**

APPENDIX G

SUMMARY OF THE EPIDEMIOLOGY AND DISEASE BURDEN OF COMMON HEADACHE DISORDERS

Headache disorders are usually classified as primary or secondary. Primary headache disorders have no identifiable cause, whereas secondary headache disorders are associated with an identified pathological cause, such as an infection, a brain tumour, or a stroke.[10]

Although headache disorders are prevalent worldwide, the intermittent nature of some of these disorders makes it difficult to estimate their incidence and prevalence.[11-13] Globally, 46% of the adult population has an active headache disorder, 20% has tension-type headache, 15% has migraine, and 3% has chronic daily headache.[13,14] The mean one-year prevalence of migraine in adults is between 4% and 15% across the World Health Organization regions and 11% in the Americas.[15] The majority of people with tension-type headache experience pain on one day a month or less, which is classified as infrequent episodic tension-type headache. However, 18% to 37% of sufferers have tension-type headache several times a month and 10% to 25% have it weekly – 1% to 3% of sufferers have chronic tension-type headache.[16,17] Approximately 3% to 5% of individuals with episodic headache progress to chronic daily headache.[18,19] Medication-overuse headache, a potentially treatable and preventable disorder, is common among individuals with chronic daily headache and may affect up to 5% of some adult populations.[13,17] In the general population, the life-time prevalence is 66% for headache, 14% to 16% for migraine, 46% to 78% for tension-type headache, and 0.06% to 0.3% for cluster headache.[10,13,19]

Studies conducted in Canada, France, Germany, and the United States show that migraine prevalence is affected by age, gender, and socioeconomic factors. Migraine is most prevalent in individuals aged between 25 and 55 years, with the highest prevalence occurring during the peak productive years (30 to 49 years of age).[10,12,20-23] Women are more likely to experience migraine than men, particularly between the ages of 40 and 45 years, when the female to male ratio reaches its zenith at 3.3:1.[12,19,23] In the United States, Caucasians are more likely to suffer migraines than Africans or Asians,[10,12,19-23] as are individuals with the lowest relative household incomes.[10,12,20-23]

In 1994, the prevalence of migraine among Canadians was 8% for men and 25% for women.[24] A national telephone survey of 1,210 Canadian women conducted in 2005 found that the prevalence of migraine in this population was relatively unchanged at 26%.[25] In 2010/2011, 5% of men and 12% of women in Canada reported that they had been diagnosed with migraine, which corresponds to 2.7 million Canadians (8%).[26] This prevalence, which is lower than the range reported for diagnosed migraine in the United States (12% to 23%), is likely an underestimate because many migraineurs do not seek professional help and would not receive a diagnosis. The regional migraine prevalence across Canada varied from 6.8% in Quebec to 9.5% in Manitoba – the prevalence in Alberta was 8.7%.[26]

Because of its chronic nature, migraine is associated with high levels of emotional distress and disability, as well as impaired quality of life for the affected individuals, their families, and society as a whole.[10,12,19,22,27-30] According to the 2013 Global Burden of Disease Study, migraine is the sixth highest cause of disability worldwide and, when combined with medication-overuse headache

(ranked 18th), places headache disorders third among the causes of years of life lost to disability worldwide.[31,32]

Emerging evidence indicates that, in some patients, migraine may be a chronic progressive disorder that is characterized by an escalating frequency of headache attacks.[18,23] Approximately 60% of migraineurs have one or more headache attacks per month.[21,29] Moderate or severe pain is experienced by approximately 90% of migraineurs, with 75% reporting impaired function and 33% requiring bed rest during their attacks.[21] Similar rates of significant debilitation are reflected in Canadian data.[23,26,29] More than 70% of Canadian migraine sufferers experience impairments in interpersonal relationships,[23] and 97% of women from a 2005 Canadian survey reported at least one psychosocial impact resulting from migraines (such as lack of control over their lives, missed days at work or family activities, or lack of understanding or cynicism from those around them).[25]

In general, headache accounts for about 20% of absences due to sickness,[11] with migraine being a major cause of absenteeism and decreased work productivity.[10,27,28,30] A 2005 survey found that, on average, Canadian women experienced at least partial incapacitation on almost 21 days a year due to migraine.[25] The 2013 Global Burden of Disease Study found that migraine and medication-overuse headache accounted for nearly 29 million and 9.8 million years lived with disability, respectively. In terms of disability-adjusted life-years (DALYs), migraine causes nearly 400 DALYs per 100,000 people worldwide, with medication-overuse headache contributing 138 DALYs.[31]

Despite their evident clinical, economic, and social burden, headache disorders, and migraine in particular, have historically been under-diagnosed and undertreated.[10,20-23,27,29,33] Many migraineurs, even those with disabling headaches, have never consulted a physician for their problem. Vast amounts of over-the-counter medications are taken for headache disorders,[10,17] and treatment is often suboptimal and characterized by low compliance.[33] More than one in four migraineurs are candidates for preventive therapy. However, although most migraine sufferers use acute treatment to relieve their headaches, a substantial number of people who might benefit from prophylactic therapy do not receive it.[12,21]

Prompt diagnosis and effective treatment, in conjunction with better information and education for patients and health professionals, are essential for improving the management of headache and migraine in primary care.[29,34]

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GUIDELINE DEVELOPMENT GROUP AND GUIDELINE UPDATE COMMITTEE

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