NATIONAL CLINICAL GUIDELINES

HEADACHE IN ADULTS

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Valid From: 22nd June 2020
Date of Next Revision: 22nd June 2022

المبادئ الإرشادية السريرية لدولة قطر
NATIONAL CLINICAL GUIDELINES FOR QATAR

وزارة الصحـــــة العامـــــة
Ministry of Public Health
State of Qatar • دولـــة قطـــر

Version History

Version	Status	Date	Editor	Description
1.0	Final	19th March 2017	Guidelines Team	Final Version for Publication
2.0	Final	22nd June 2020	Guidelines Team	Updates to Sections 9 and 10.

Citation

Suggested citation style:

Ministry of Public Health Qatar. National Clinical Guideline: Headache in Adults (2020).

Abbreviations

The abbreviations used in this guideline are as follows:

ACE	Angiotensin converting enzyme
ARBs	Angiotensin receptor blockers
CBT	Cognitive behavioural therapy
COCP	Combined oral contraceptive pill
COPD	Chronic obstructive pulmonary disease
ECG	Electrocardiogram
EMG	Electromyography
FDA	US Federal Drug Administration
HRT	Hormone replacement therapy
MOH	Medication-overuse headache
NSAID	Non-steroidal anti-inflammatory drug
TCA	Tricyclic antidepressants
TID	*Ter in die* (three times per day)
TTH	Tension-type headache

View Pathway

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1 Information about this Guideline

1.1 Objective and Purpose of the Guideline

The purpose of this guideline is to define the appropriate diagnosis and management of headaches in adults. The objective is to improve the appropriateness of investigation, prescribing and referral of patients presenting to healthcare provider organisations in Qatar. It is intended that the guideline will be used primarily by physicians in both primary care and secondary care outpatient settings.

1.2 Scope of the Guideline

Aspects of care covered in this guideline include the following:

- Diagnosis and assessment of headaches presenting in adults aged over 18 years.
- Diagnosis and management of primary headaches, including:
    - Migraine.
    - Tension headache.
    - Cluster headache, i.e. trigeminal autonomic cephalalgias.
- Consideration of medication-overuse headache.
- Red flags and indications for emergency referral.

Aspects of care not covered in this guideline include the following:

- Management of the serious pathological causes of headache.

1.3 Editorial Approach

This guideline document has been developed and issued by the Ministry of Public Health of Qatar (MOPH), through a process which aligns with international best practice in guideline development and localisation. The guideline will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Qatar.

The editorial methodology, used to develop this guideline, has involved the following critical steps:

- Extensive literature search for well-reputed published evidence relating to the topic.
- Critical appraisal of the literature.
- Development of a draft summary guideline.
- Review of the summary guideline with a Guideline Development Group, comprised of practising healthcare professionals, subject matter experts and patient representatives, from across Qatar.
- Independent review of the guideline by the National Clinical Guidelines & Pathways Committee, appointed by the MOPH, from amongst stakeholder organisations across Qatar.

Whilst the MOPH has sponsored the development of the guideline, the MOPH has not influenced the specific recommendations made within it.

1.4 Sources of Evidence

The professional literature has been systematically queried using specially developed, customised, and tested search strings. Search strategies are developed to allow efficient yet comprehensive analysis of relevant publications for a given topic and to maximise retrieval of articles with certain desired characteristics pertinent to a guideline.

For each guideline, all retrieved publications have been individually reviewed by a member of the Editorial Team and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.
2. Are published in higher-quality journals.
3. Address an aspect of specific importance to the guideline in question.

Further information about the literature search and appraisal process is included in the appendix.

1.5 Evidence Grading and Recommendations

Recommendations made within this guideline are supported by evidence from the medical literature and where possible the most authoritative sources have been used in the development of this guideline. In order to provide insight into the evidence basis for each recommendation, the following evidence hierarchy has been used to grade the level of authoritativeness of the evidence used, where recommendations have been made within this guideline.

Where the recommendations of international guidelines have been adopted, the evidence grading is assigned to the underlying evidence used by the international guideline. Where more than one source has been cited, the evidence grading relates to the highest level of evidence cited:

- **Level 1 (L1):**
  - Meta-analyses.
  - Randomised controlled trials with meta-analysis.
  - Randomised controlled trials.
  - Systematic reviews.

- **Level 2 (L2):**
  - Observational studies, examples include:
    - Cohort studies with statistical adjustment for potential confounders.
    - Cohort studies without adjustment.
    - Case series with historical or literature controls.
    - Uncontrolled case series.
  - Statements in published articles or textbooks.

- **Level 3 (L3):**
  - Expert opinion.
  - Unpublished data, examples include:
    - Large database analyses.
    - Written protocols or outcomes reports from large practices.

In order to give additional insight into the reasoning underlying certain recommendations and the strength of recommendation, the following recommendation grading has been used, where recommendations are made:

- **Recommendation Grade A (RGA):** Evidence demonstrates at least moderate certainty of a net benefit from the recommendation.
- **Recommendation Grade B (RGB):** Evidence is insufficient, conflicting, or poor and demonstrates an incomplete assessment of net benefit vs harm; additional research is recommended.
- **Recommendation Grade C (RGC):** Evidence demonstrates potential harm that outweighs benefit; additional research is recommended.
- **Recommendation of the GDG (R-GDG):** Recommended best practice on the basis of the clinical experience of the Guideline Development Group members.

1.6 Guideline Development Group Members

The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the National Clinical Guidelines & Pathways Committee. The GDG members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

Guideline Development Group members		
Name	**Title**	**Organisation**
Professor Amir Salim N Al-Din	Consultant Neurologist	Al Ahli Hospital
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1.7 National Clinical Guidelines & Pathways Committee Members

The following table lists members of the National Clinical Guidelines & Pathways Committee (NCGPC), appointed by the MOPH. The NCGPC members have reviewed and provided their feedback and approval of the guideline document. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

National Clinical Guidelines & Pathways Committee (NCGPC) Members		
Name	**Title**	**Organisation**
Ms Huda Amer Al-Katheeri	Chair of the NCGPC, Director of Strategic Planning & Performance Department	Ministry of Public Health
Shk Dr Mohammed Hamad J. Al Thani	Co-Chair of the NCGPC, Director of Public Health	Ministry of Public Health
Prof Anthony Akobeng	Chair Clinical Practice Guidelines Committee	Sidra Medicine
Dr Alshaymaa Mohammed A. M. Al-Motawa	Consultant Family Medicine	Qatar Petroleum

[1] Mr Ahmed Babiker attended the MOPH in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.

National Clinical Guidelines & Pathways Committee (NCGPC) Members		
Name	**Title**	**Organisation**
Dr Basil Bashqawi	Accreditation Coordinator, Dept of Health Professions	Ministry of Public Health
Dr Abi Khalil Charbel	Associate Professor of Medicine Consultant Cardiology	Weill Cornell Medicine-Qatar
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Dr Dahlia Mustafa Hassan	Consultant Family Medicine	Primary Health Care Corp
Dr Ghassan Youseph Hommos	Consultant Endocrinology	Al Emadi Hospital
Dr Egon Toft	VP and Dean of College of Medicine	College of Medicine, Qatar University

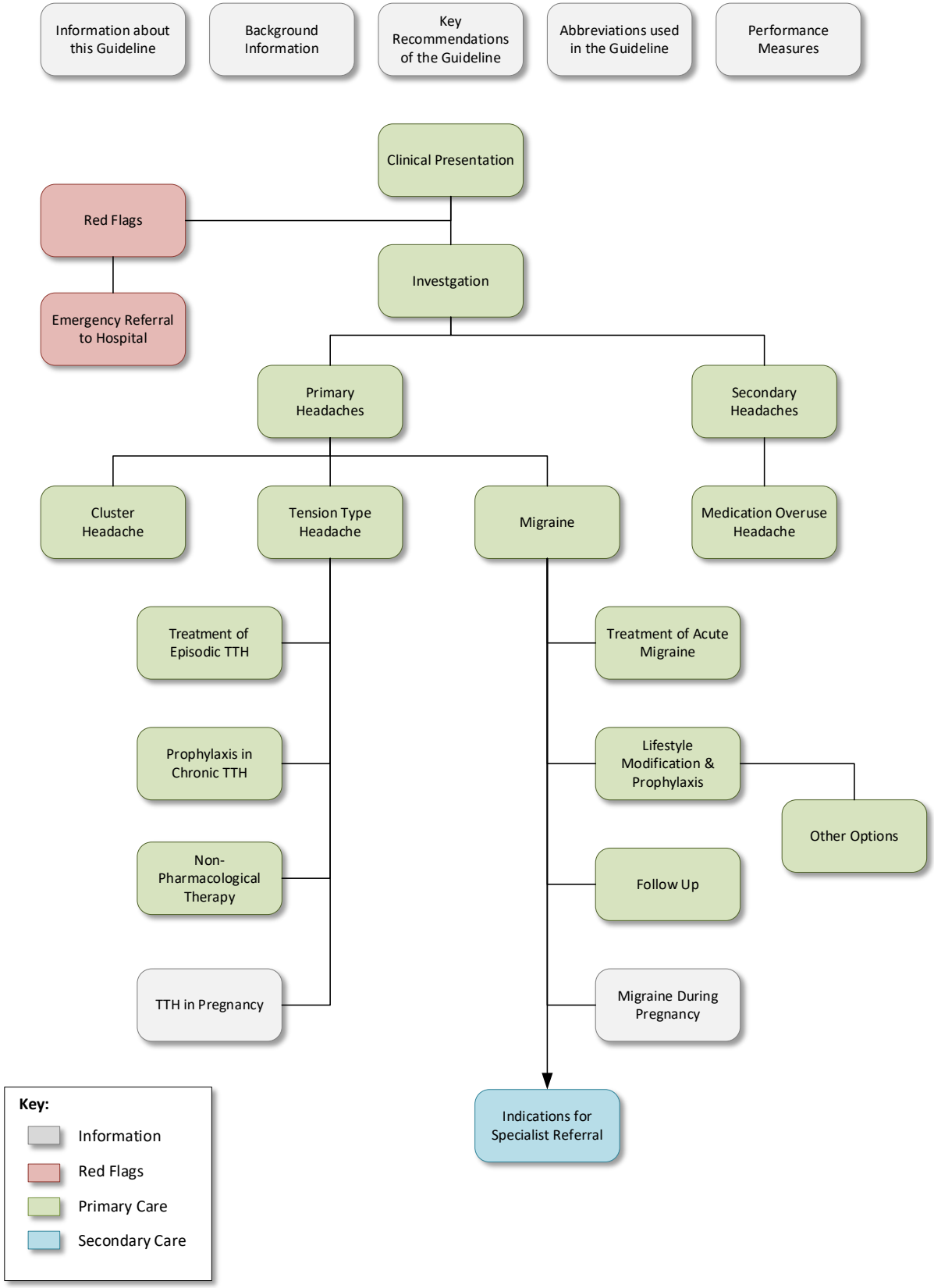
1.8 Responsibilities of Healthcare Professionals

This guideline has been issued by the MOPH to define how care should be provided in Qatar. It is based upon a comprehensive assessment of the evidence as well as its applicability to the national context of Qatar. Healthcare professionals are expected to take this guidance into account when exercising their clinical judgement in the care of patients presenting to them.

The guidance does not override individual professional responsibility to take decisions which are appropriate to the circumstances of the patient concerned. Such decisions should be made in consultation with the patient, their guardians, or caregivers and should consider the individual risks and benefits of any intervention that is contemplated in the patient's care.

2 Headache Pathway

Click on a box below to see the relevant page of the Pathway.



3 Key Recommendations of the Guideline

The key recommendations of this guideline are:

Investigation:

- Is indicated only when history or examination suggest headache is secondary to another condition [1,2] [**L2**].
- Is not recommended simply to reassure patients who have a primary headache [1,2] [**L2**, **RGA**].
- Neuroimaging and lumbar puncture may be appropriate for patients presenting with red flag symptoms or signs (see *Section 7*) [3–6] .

Tension Type Headache:

When considering management options for tension-type headache note that [7] [**L2**]:

- The type of management depends on the nature of the tension-type headache:
    - Use acute drugs in episodic tension-type headache:
        - Use simple analgesia as first-line treatment [3] [**L1, RGA**].
        - Use combination analgesics containing caffeine as second-line treatments [3,7] [**L1, RGA**].
    - Use prophylactic drugs in chronic tension-type headache:
        - Use amitriptyline as first-line prophylaxis [1,2,7] [**L2, RGA**].
        - Use either mirtazapine or venlafaxine as alternative prophylactic choices [1,2,7] [**L2, RGA**].
    - Analgesics are often ineffective in chronic tension-type headache.
- Non-pharmacological treatment of chronic tension-type headache should always be considered (see *Section 8.2.3*).

Migraine Headaches:

Pharmacological treatment of migraine:

- Simple analgesia:
    - Use paracetamol for migraines of mild to moderate severity [1–3] [**L1**, **RGA**].
    - Use an NSAID for migraines of all severities [3] [**L1**, **RGA**].
- Triptans, taken as soon as possible after onset:
    - Oral zolmitriptan and both oral and subcutaneous sumatriptan.
    - Consider subcutaneous sumatriptan (6 mg) [3] [**L1, RGA**]:
        - In severe migraine and those who were not adequately managed with oral triptans or those with vomiting early on during migraine attacks.
    - Consider a combination of oral sumatriptan (50-100 mg) and naproxen sodium (500-550 mg) [3] [**L1, RGA**]:
        - This may be particularly useful in patients with prolonged attacks and/or headache recurrence.
- Consider an oral anti-emetic even in the absence of nausea or vomiting [3,8] [**L1**].

Pharmacological Prophylaxis of Migraine:

- Consider using one of the following as prophylactic treatment [1–3,9] [**L1**, **RGA**]:
    - Beta-blockers.
    - ARBs and ACE inhibitors.
    - Calcium-channel blockers.
    - Antidepressants.
    - Antiepileptics.
    - Monoclonal antibodies.

Cluster Headaches:

- Refer all patients with a first-episode of cluster headache to a neurologist to confirm the diagnosis [**R-GDG**].
- Acute treatment options include:
  - 100% oxygen therapy [3,10] [**L2**].
  - Subcutaneous triptan [10–12] [**L2**].
- Acute treatment should not include any of the following [10] [**L2**]:
  - Paracetamol.
  - NSAIDs.
  - Opioids.
  - Ergots.
- Transitional preventative treatment allows for rapid suppression of cluster attacks in the interim until the maintenance prophylaxis reaches therapeutic levels [13,14] . Options include [1–3,13,14] :
  - Corticosteroids.
  - Occipital nerve block.
- The goal of maintenance prophylaxis is to provide sustained suppression of headaches during the expected cluster period [3,15] :
  - Use verapamil as first-line prophylaxis.
  - Use lithium as second-line prophylaxis.
  - Melatonin may also be used in some patients [3] [**L1, RGA**].

Medication Overuse Headache:

- Medication withdrawal should be attempted in all patients with medication-overuse headache [3] [**L3**].
- Consider prescribing prophylactic treatment for the underlying primary headache disorder in addition to withdrawal of overused medication [10] [**L2**].
- Do not routinely offer inpatient withdrawal for medication-overuse headache [10].
- Consider specialist inpatient withdrawal of overused medication for patients [10] [**L2**]:
  - Who are using strong opioids; or
  - Who have relevant comorbidities; or
  - In whom previous repeated attempts at withdrawal of overused medication have been unsuccessful.
- Conduct a review [1,2,10] :
  - After 2-3 weeks to ensure withdrawal is achieved.
  - After 4-8 weeks to review the diagnosis and further management.
  - Most patients revert to their original headache type, e.g. migraine or tension-type headache within 2 months – further follow up may be necessary during this time [1,2,16] :
    - Overused medications may be reintroduced after 2 months, with explicit restrictions on frequency of use.
- Relapse is common and occur within the first year after withdrawal [1,2].
  - Consider treatment with behavioural therapies [1,2] [**L2**].
- Manage failure to withdraw by [1,2] [**L2**]:
  - Identifying and managing reasons for failure or relapse.
  - Considering counselling.
  - Referral to a neurologist for assessment and further management.
- In some cases, withdrawal of overused medication does not lead to recovery from headaches [1,2] [**L2**].

4 Background Information

4.1 Definitions

4.1.1 Primary Headaches

Primary headaches are headaches that do not have an underlying pathological cause [3,17] .

- The most common types of primary headache include [10] :
  - Tension-type headaches (TTH).
  - Migraine headaches.
  - Cluster headaches.

Tension Type Headaches

TTH are typically described as an episodic, non-pulsating, bilateral headache which is usually mild to moderate in severity [7,16] .

- There are two subtypes of tension headache based on frequency of occurence[7]:
  - Episodic TTH:
    - Intermittent TTH that occurs for up to 1-14 days per month.
  - Chronic TTH:
    - TTH that lasts for ≥ 15 days per month.

Migraine Headaches

Migraine headaches are typically described as recurrent episodic, pulsating, unilateral headaches of moderate to severe intensity lasting 4-72 hours. Migraines are typically triggered by a variety of stimuli and are often accompanied by nausea and vomiting [1,2,10,17–19] [**L2**]:

- There are two major subtypes of migraine [10,17] :
  - Migraine with aura:
    - A clinical syndrome characterised by gradual development of recurrent and fully reversible unilateral visual, sensory, or central nervous features lasting several minutes and usually followed by a headache within one hour [10,17] .
  - Migraine without aura:
    - Migraine headaches that occur in the absence of visual, sensory, or central nervous features [17] .

Cluster headaches

Cluster headaches are typically described as attacks of severe, strictly unilateral pain which is orbital, supraorbital, or temporal (or in any combination of these sites) and last for 15-180 minutes. Cluster headaches tend to occur in frequencies ranging from once every other day to up to 8 times a day [17] .

4.1.2 Secondary Headaches

Secondary headaches are headaches in which an underlying pathological condition is found [3,17] .

The various pathologies that may cause secondary headaches include [1,2,10,17] :

- Vascular headaches, e.g.:
  - Intracranial haemorrhage.
  - Carotid dissection.
  - Vasculitis including:
    - Temporal arteritis.

- Non-vascular headaches, e.g.:
    - Raised intracranial pressure, e.g. from:
        - Space-occupying lesion.
        - Idiopathic intracranial hypertension.
- Intracranial or systemic infections, e.g.:
    - Encephalitis.
    - Meningitis.
    - Brain abscess.
- Substance misuse or withdrawal, including:
    - Medication Overuse Headache (MOH):
        - MOH is described as a headache that lasts ≥ 10-15 days for a period of ≥ 3 months in patients who regularly use medication. The duration of headache depends on type of medication used.
    - Illicit drug use.
- Trauma of the head or neck, e.g.:
    - Head injury.
    - Whiplash.
- Disorders of surrounding structures, e.g.:
    - Acute glaucoma.
    - Sinusitis.
- Disorders of homeostasis, e.g.:
    - Hypertensive headache.
    - Hypoxia/hypercapnia-induced headache.
- Psychiatric conditions, e.g.:
    - Somatoform disorder.

4.2 Epidemiology

Headache is a very common clinical disorder and is one of the main reasons for patients to consult a primary care physician [1,2] .

The prevalence of headache in Qatar may be as high as 72.5%, with prevalence of subtypes reported as follows [20,21] :

- Migraine headache: 7.9%.
- TTH: 11.2%.
- Mixed-type headaches: 16%.

5 Clinical presentation

Take a comprehensive medical history including the following aspects of the headache [1–3] [**L2**, **RGA**]:

- Temporal profile.
- Character.
- Pain location.
- Exacerbating or alleviating factors.
- Health between attacks.
- Consider the presence of co-existent conditions that may influence treatment choice:
    - Depression.
    - Insomnia.
    - Anxiety.
    - Asthma.
    - Hypertension.
    - History of heart disease or stroke.

Conduct a physical examination including [1–3,18] :

- Vital signs.
- Examination of extracranial structures, such as:
    - Carotid arteries.
    - Sinuses.
    - Scalp arteries.
    - Cervical para-vertebral muscles for abnormalities.
- Neck examination including:
    - Neck posture.
    - Range of movement.
    - Palpation of muscle for tender points.
- Focused neurological examination.

Consider performing the following, if indicated [3] :

- Examine for temporomandibular joint disorders:
    - Assess jaw movements.
    - Palpate the muscles of mastication for tender points.
- Eye examination.

6 Investigations

Investigation of headache:

- Is indicated only when history or examination suggest headache is secondary to another condition [1,2] [**L2**].
- Is not recommended simply to reassure patients who have a primary headache [1,2] [**L2**, **RGA**].

NB: Neuroimaging and lumbar puncture may be appropriate for patients presenting with red flag symptoms or signs (see *Section 7*) [3–6] .

7 Red Flags

The indications for emergency referral and investigation are as follows [3–6] :

- First and/or worst headache of the patient's life.
- Focal neurological signs (other than typical migrainous aura).
- Headache with change in personality, mental status or level of consciousness.
- Symptoms or signs of raised intracranial pressure, e.g. headache worsening with Valsalva manoeuvre or papilloedema.
- Rapid onset headache with exercise.
- New headache in older patients (aged over 50 years).
- New headache in pregnancy or the post-partum period.
- New-onset headache in a patient with risk factors for HIV infection, cancer, or immunosuppression.
- Headache with signs of systemic illness (e.g. fever, stiff neck, rash).
- Sudden onset of headache (maximal intensity within seconds to minutes).
- Tenderness over the temporal artery.
- Headache subsequent to head trauma.
- Headache increasing in frequency and severity.
- History of dizziness or lack of coordination.
- Headache associated with severe unilateral eye pain, red eye, fixed and dilated pupil, hazy cornea, or diminished vision.

8 Tension Type Headache

8.1 Presentation

Key features of TTH typically include [1,2,7,10,17] :

- Bilateral headache.
- Pressing or tightening in quality.
- Mild-to-moderate in intensity.
- Not aggravated by routine physical activity.
- Not associated with accompanying symptoms such as nausea or vomiting.
- Sometimes accompanied by the presence of photophobia or phonophobia, but not both.
- May be associated with peri-cranial tenderness.
- Not caused by other conditions, such as a pyrexial illness or medication-overuse.

8.1.1 Episodic Type TTH

Clinical diagnostic features include [3,17] [**L2**, **RGB**]:

- ≤ 10 episodes of headache occurring on average < 1 day per month; and
- Duration lasting from 30 mins to 7 days; and
- Both of the following features:
    - No nausea or vomiting.
    - Either none or one of the following:
        - Photophobia; or
        - Phonophobia.
- The patient has at least two of the following:
    - Bilateral location.
    - Pressing/tightening (non-pulsating) quality.
    - Mild-to-moderate intensity.
    - Not aggravated by routine physical activity.
- Not attributed to another disorder.

8.1.2 Chronic TTH

Chronic TTH clinical features include [1,2,17] :

- Headache occurring on ≥ 15 days per month on average for ≥ 3 months.
- Headache lasts hours or may be continuous.
- Has at least two of the following characteristics:
    - Bilateral location.
    - Pressing/tightening (non-pulsating) quality.
    - Mild-to-moderate intensity.
    - Not aggravated by routine physical activity.
- Has both of the following features:
    - No nausea or vomiting.
    - Either photophobia or phonophobia.
- May be stress-related, associated with functional or structural cervical abnormalities, or the result of a cranial musculoskeletal abnormality.
- Headache not attributed to another disorder.

8.2 Management

When considering management options for TTH note that [7] [**L2**]:

- The type of management depends on the nature of TTH:
  - Use acute drugs in episodic TTH.
  - Use prophylactic drugs in chronic TTH.
- Analgesics are often ineffective in chronic TTH.

8.2.1 Treatment of Episodic TTH

First-Line Treatment [3] [**L1**, **RGA**]:

- Non-steroidal anti-inflammatory drug (NSAID).
- Paracetamol.

If first-line treatments are unsuccessful, consider treatment with second-line medication as follows.

Second-Line Treatment:

- Combination analgesics containing caffeine [3,7] [**L1**, **RGA**].
- NB: Beware of risk of MOH if [1,2,7] [**L2**, **RGA**]:
  - Simple analgesics are used regularly on ≥ 14 days a month, or combination analgesics are used regularly on ≥ 10 days a month.
  - Combining simple analgesics with codeine, dihydrocodeine, or barbiturates.

Avoid using the following drugs in acute treatment of TTH [3,7] [**L1**, **RGA**]:

- Triptans.
- Muscle relaxants.
- Opioids.

8.2.2 Prophylaxis in Chronic TTH

For patients with chronic TTH, preventative treatment should be considered [3,7,18] [**L2**, **RGA**].

First-Line Prophylaxis:

- Amitriptyline [1,2] [**L2, RGA**]:
  - Use nortriptyline if amitriptyline is poorly tolerated.
  - Withdrawal of amitriptyline may be attempted after improvement has been maintained for 4-6 months.

When prescribing tricyclic antidepressants (TCA) [1,2,7] [**L2, RGA**]:

- Inform the patient that while it is an antidepressant, it also has an independent action on pain.
- Try an alternative treatment if there is no improvement within 4 weeks on maintenance treatment.

Second-Line Prophylaxis [3] :

- Mirtazapine.
- Venlafaxine.

NB: Avoid routine use of botulinum toxin A for prophylactic treatment of chronic TTH [3] [**L1**]. The drug should only be administered for headache by neurologists [**R-GDG**].

8.2.3 Non-Pharmacological Therapy

Non-pharmacological treatment of chronic TTH should always be considered and should include:

- Regular exercise and/or physiotherapy [1,2,7] [**L2**, **RGB**].
- Stress management [7] [**L2**, **RGA**].
- Relaxation therapy [1,2,7] **[L2**, **RGB**].
- Cognitive behavioural therapy (CBT) may be beneficial for some patients [1–3,7] [**L2**, **RGB**].
- Acupuncture – consider a course of up to 10 sessions over 5-8 weeks [3,10] [**L2**, **RGA**].
- Electromyography (EMG) biofeedback [7] [**L2, RGA**].

Management of TTH triggers is effective and involves lifestyle advice such as [7] :

- The importance of regular and appropriate meals.
- Adequate hydration.
- Avoidance of caffeine containing drinks.
- A regular sleep pattern (avoiding too little or too much sleep).

8.3 Tension Type Headache in Pregnancy

The use of medication for TTH should be avoided during pregnancy [3] [**L2, RGB**]:

- TTH does not cause nausea and vomiting, therefore it does not pose a medical risk in itself.
- Where used, the benefits and risks should be carefully considered.

8.3.1 Treatment in Pregnancy

Paracetamol [3] [**L3**, **RGB**]:

- When headache requires management with analgesia.
    - FDA Pregnancy Category C [22] .

Ibuprofen [3] [**L3**]:

- Use only if paracetamol is not adequate.
    - FDA Pregnancy Category C [22] .

NSAIDs during pregnancy [3,22] :

- May cause an increased risk of spontaneous abortion during the first trimester.
- Increase the risk of premature closure of the ductus arteriosus when used during the third trimester.
- May be used in the second trimester of pregnancy only.
- Avoid all NSAIDs in the third trimester, including ibuprofen.

8.3.2 Prophylaxis in Pregnancy

Prophylactic management of TTH should be avoided in pregnant patients [3] [**L3**, **RGB**]:

- Seek specialist advice if prophylactic treatment is required during pregnancy.
- Headache medications should be gradually discontinued prior to the start of a planned pregnancy.
- Headache medications started before the beginning of pregnancy should be discontinued as soon as possible.

9 Migraine

9.1 Presentation

Migraine without Aura:
Clinical diagnostic criteria [3,17] [**L2**]:

- At least 5 attacks of:
  - Headache lasting 4-72 hours.
  - Associated with at least two of the following:
    - Unilateral headache.
    - Pulsatile quality.
    - Moderate or severe intensity.
    - Aggravation or avoidance of routine physical activity.
  - At least one of the following occurs during the headache:
    - Nausea and/or vomiting.
    - Photophobia and phonophobia.

NB: Episodic TTH often coexists with migraine without aura [3,17] .

Migraine with Aura:
Clinical diagnostic criteria [1–3,10,18] [**L2**]:

- At least two attacks of:
  - One or more of the following fully reversible aura symptoms:
    - Visual.
    - Sensory.
    - Speech or language disturbance.
    - Motor disturbance.
    - Brainstem symptoms.
    - Retinal symptoms.
  - At least two of the following:
    - At least one aura symptom which spreads gradually over ≥ 5 mins and/or:
      - Two aura symptoms occurring in quick succession.
    - Each individual aura symptom last 5-60 mins (motor symptoms may last up to 72 hours).
    - At least one aura symptom is unilateral.
    - Headache occurs either with aura or followed within 60 mins of the aura.
  - Transient ischaemic attack is excluded.

Chronic Migraine:
Diagnose chronic migraine when [3] [**L2**]**:**

- The patient fulfils the criteria for a migraine diagnosis; and
- The patient experiences ≥ 15 days of migraine per month for > 3 months; or ≥ 8 migrainous attacks per month.

Chronic migraine with medication-overuse may be diagnosed if [3] [**L2**]:

- The patient uses any of the following for ≥ 10 days per month:
  - Opioids.
  - Triptans.
  - Ergots.
  - Combination analgesics.
- The patient uses any of the following for ≥ 15 days per months or more:
  - Paracetamol.
  - NSAIDs.

9.2 Management

Migraine can cause significant disability despite drug therapy.

The management approach should include [1–3] :

- Acute pharmacological treatment during individual migraine attacks.
- Prophylactic pharmacological therapy to reduce frequency of attacks.
- Non-pharmacological management including lifestyle advice.
- Investigation and management of any co-existing psychiatric and medical disorders.
- Patient encouragement to take an active role in their treatment and take on self-management principles, including [1–3,23] [**L2**]:
    - Self-monitoring to identify factors that influence their migraine.
    - How to manage their own migraine triggers.
    - Relaxation techniques.
    - Good sleep hygiene in combination with drug treatment.
    - Stress management techniques.
    - Cognitive restructuring to avoid negative thinking.
    - How to communicate with their family and others about their pain.
    - How to use their medications, e.g. advice on taking drugs early on during a migraine attack.
    - Stopping smoking and not using the combined oral contraceptive pill (COCP), if the patient has migraine with aura.

Multimodal multidisciplinary care approach is recommended for migraine patients. It involves exercise, relaxation and stress management training and nutritional advising simultaneously [3] **[L1, RGA]** .

9.2.1 Treatment of Acute Migraine

For the treatment of migraine [3] :

- Use treatments for migraine early in the attack.
- Use treatments in combination with anti-emetics.

Simple Analgesia:

- Use paracetamol or acetaminophen for migraines of mild to moderate severity [1–3] [**L1**, **RGA**].
    - The evidence for its use as a stand-alone drug is low.
- Use an NSAID for migraines of all severities [3] [**L1**, **RGA**], e.g.:
    - Ibuprofen.
    - Diclofenac.
    - Naproxen.
    - Acetylsalicylic acid.

Triptans:

- Should eb taken as soon as possible after onset of symptoms.
- The available triptans in Qatar at present are [**R-GDG**]:
    - Oral zolmitriptan.
    - Oral and subcutaneous sumatriptan.
- If no response to the initial dose of oral triptan, take further doses every two hours up to the maximum dose [3] .
- If the patient does not demonstrate an adequate response with one triptan, consider an alternative triptan [3] [**L1, RGA**].
- Consider subcutaneous sumatriptan (6 mg) [3] [**L1, RGA**]:

  - In severe migraine and those who were not adequately managed with oral triptans.
  - In patients with vomiting early on during migraine attacks.
- Consider a combination of oral sumatriptan (50-100 mg) and naproxen sodium (500-550 mg) [3] [**L1, RGA**]:
  - This may be particularly useful in patients with prolonged attacks and/or headache recurrence.
- NB: Triptans should be avoided in patients at risk of TIA, stroke, or MI [3] .

Anti-Emetics in Migraine:
Consider an oral anti-emetic, e.g. [3,8] [**L1**]:

- Domperidone
- Metoclopramide:
  - Has more side effects than domperidone.
- Prochlorperazine:
  - Indicated when poor response to domperidone or metoclopramide.
- Use suppositories if oral intake is restricted due to active vomiting.
- Anti-emetics can be considered even in the absence of nausea and vomiting.

NB: Narcotics are not recommended for the emergency or routine treatment of migraine due to the risk of medication-overuse headache [1–3] **[L1, RGC]** . They can only be used when other treatments are ineffective or contraindicated [3] .

9.2.2 Lifestyle Advice and Pharmacological Prophylaxis

Advise the patient to avoid trigger factors, such as [3] :

- Change in sleep pattern.
- Skipped or irregular meals.
- Change in stress levels.
- Specific foods.

Ask the patient to complete a headache diary and consider preventative treatment if [3,10] [**L2, RGA**]:

- Migraine attacks are causing frequent disability, e.g. ≥ 3 attacks per month that result in disability lasting for ≥ 3 days.
- Standard analgesia and triptans are either contraindicated or ineffective.
- Migraine attacks are suspected of causing medication-overuse (≥10 days per months for triptans and narcotics or ≥15days per month for NSAIDs and acetaminophen).
- Frequent attacks with prolonged aura.

Before starting pharmacological prophylaxis:

- Benefits and risks should be discussed, including [10] [**L2, RGA**]:
  - Patient preferences.
  - Comorbidities.
  - Risk of adverse events.
  - Impact of headache on quality of life.
- Advise the patient that [3] [**L2, RGB**]:
  - A reduction of headache frequency, severity or duration can take up to 8 weeks for the benefit to be seen.
  - There is no cure for migraine and attacks are unlikely to be abolished completely.
  - Preventive treatment reduces the frequency of attacks, but acute treatment will still be required.
  - It is essential to take the medication daily and as prescribed.

Pharmacological Prophylaxis:
Consider using one of the following as prophylactic treatment [1–3,9] [**L1**, **RGA**]:

- Beta-blockers, e.g.:
  - Metoprolol.
  - Propranolol.
  - NB: Not suitable for patients with asthma, peripheral vascular disease, heart failure, or depression.
- Angiotensin-receptor blockers (ARBs) and angiotensin converting enzyme (ACE) inhibitors, e.g.:
  - Candesartan:
    - Preferable in patients with concomitant hypertension.
    - Not recommended for pregnant women or those planning to get pregnant.
  - Lisinopril:
    - Has more side effects than candesartan.
    - Less effective and less expensive than candesartan.
    - Not recommended in patients with angioedema and bilateral stenosis of the renal artery.
    - Not recommended for pregnant women or those planning to get pregnant.
- Calcium channel blockers (CCBs) e.g.:
  - Flunarizine:
    - Induced headache as side effect.
    - Contraindicated in depression.
  - Verapamil.
- Antidepressants:
  - Amitriptyline [18] [**L1, RGA**]:
    - Amitriptyline at early evening, when migraine co-exists with:
      - TTH.
      - Another chronic pain condition.
      - Disturbed sleep.
      - Depression.
    - Should be started at a low dose and titrated.
  - Nortriptyline.
  - Venlafaxine.
- Anti-epileptics:
  - Topiramate [3,9,10] [**L1**, **RGA**]:
    - Topiramate may be preferred in patients with obesity.
    - Associated with potentially serious adverse effects including serious memory impairment and depression.
    - Should be avoided in patients with closed-angle glaucoma or renal calculi.
    - Advise female patients of childbearing potential that topiramate is associated with a risk of foetal malformations and can impair the effectiveness of hormonal contraceptives.
  - Divalproex sodium [3] [**L1**, **RGA**]:
    - May be a preferred option in patients with comorbid depression.
    - Should be avoided in patients with liver disease, pregnant women, and women of childbearing age.
      - ❖ Results in serious foetal malformations and may result in weight gain.
- Monoclonal antibodies [24,25]:
  - Erenumab: 70mg – 140mg subcutaneous monthly injection.
  - Frenezumab: 225mg monthly, or 675mg three-monthly, subcutaneous injection.
  - Galcanezumab: 240mg loading dose by subcutaneous injection, followed by 120mg subcutaneous monthly injection.

Vitamins, Minerals, and Herbal Remedies for Migraine Prophylaxis:
Have minimal side effects, however lower efficacy than drug prophylaxis. Examples include [3,10] [**L1**, **RGA**]:

- Riboflavin.
- Magnesium citrate.
- Co-enzyme Q10.

Butterbur (*Petasites hybridus*) is not recommended for migraine prophylaxis due to the variability in the available preparations [3] .

Botulinum toxin type A:

- Botulinum toxin type A may be used for chronic migraine in the following circumstances [3,26] :
    - Headache has not responded to at least 3 prior pharmacological prophylaxis therapies; and
    - The patient is appropriately managed for medication-overuse.
    - The drug is to be administered by a neurologist.
- Stop treatment with botulinum toxin type A in patients whose condition [26] [**L2**, **RGA**]:
    - Is not adequately responding to treatment (defined as < 30% reduction in headache days per month after two treatment cycles); or
    - Has changed to episodic migraine (defined as < 15 headache days per month for 3 consecutive months).
- Not recommended as a prophylaxis for episodic migraine.

9.2.3 Other Prophylaxis Options

Consider non-pharmacological management, such as:

- Acupuncture [3,10] [**L2**, **RGA**]:
    - A course of up to 10 sessions of acupuncture over 5-8 weeks.
- Stress management [3,18] [**L2**, **RGA**]:
    - Exercise, including cranio-cervical exercises, and physical therapy may help.
    - CBT may be beneficial for some patients.

NB: Homeopathy has no known benefit [1,2,13,14] .

9.3 Indications for Referral to Neurology

Consider outpatient referral to a neurologist if [8] :

- A complication of migraine has developed, e.g. migraine has become chronic.
- Diagnosis of migraine is uncertain, e.g. another primary or secondary headache disorder is suspected.
- Maximal treatment available in primary care does not adequately control the symptoms – suspect MOH.
- Preventative treatment does not adequately reduce the frequency of headaches.

9.4 Follow Up

Prophylaxis:

- Continue prophylaxis for two months at the target dose, if no benefit is seen after this time the drug may be discontinued or changed [7] [**L2**].
- NB: It may take several months for the benefit to fully manifest.

After 6-12 months of successful prophylaxis [1,2,10,27] [**L2**, **RGA**]:

- Review the need for continuing migraine prophylaxis.
- Consider withdrawal to establish continued need:
  - Taper over 2-3 weeks.
- Success for prophylactic treatment of migraine is defined as one or more of the following [18] :
  - A decrease in migraine attack frequency by > 50%.
  - A decrease in pain and disability with each individual attack.
  - An enhanced response to acute, specific, anti-migraine therapy.

Treatment of Migraine Attacks:

Success for treatment of migraine is defined as:

- Complete pain relief and return to normal function within 2 hours of taking medication – in addition, patients should [13,14,18] :
  - Not have intolerable side effects; and
  - Should find their medications reliable enough to plan daily activities despite migrainous headaches.

If symptomatic treatment has been effective and well tolerated [8] :

- Continue indefinitely and ensure review of medication occurs on a regular basis.
- Ask the patient to re-consult only if they experience problems in the future, e.g. increasing severity or frequency of migraine.

If treatment has not been adequate or was poorly tolerated [8] :

- Reconfirm diagnosis and exclude conditions that may mimic migraine.
- Reassess lifestyle advice and check that usage of treatment is correct.
- Rule out MOH.

9.5 Migraine During Pregnancy

Migraine during pregnancy frequently improves but may recur following childbirth [1,2] . Offer lifestyle advice and consider encouraging the patient to use a migraine diary to identify triggers [18] [**L2**].

9.5.1 Pharmacological Management

Where possible, pharmacological therapy for migraine management should be avoided during pregnancy [3] [**L3**, **RGB**]:

- Use the lowest dose possible, and for the shortest time.
- Offer paracetamol either alone or in combination with codeine for acute treatment.
- Consider prescribing an NSAID or triptan after discussing the patient's need for treatment and the risks associated with the use of each medication during pregnancy [3,22] [**L2**].

9.5.2 Prophylaxis in Pregnancy

Seek specialist advice if prophylactic treatment is required during pregnancy [3,10] [**L3**]:

- Medications should be gradually discontinued prior to the start of a planned pregnancy.
- Medications started before the beginning of pregnancy should be discontinued as soon as possible.

9.5.3 Pharmacological Management During Lactation

The following medications can be used while breastfeeding when the benefits outweigh the risks [3] :

- Acetaminophen.
- Metoclopramide.
- Sumatriptan.
- Ibuprofen.
- Codeine for women with children older than 1 month and who are not ultrafast metabolizers. Repeated doses should be avoided

Acetylsalicylic acid is not recommended [3] .

9.6 Hormone-Related Migraine

Menstrual migraine [1,2,10] [**L2**, **RGA**]:

- Should be suspected in female patients who experience migraines predominantly between 2 days before and 3 days after menstruation in at least 2 of 3 consecutive menstrual cycles:
    - Confirm diagnosis using a headache diary for at least two menstrual cycles.
- Subtypes include:
    - Pure menstrual migraine:
        - Patient is free from migraine at all other times.
        - Affects < 10% of patients with migraine.
    - Menstrually-related migraine:
        - Additional attacks of migraine (with or without aura) at other times.

Menopause [1,2] :

- May exacerbate migraine, particularly if surgically-induced without replacement therapy.
- HRT is not contraindicated.

COCP [1,2,9,10,13,14,28] :

- Should not be prescribed to women with migraine with aura.
- When indicated, it should be prescribed as a continuous treatment and in low dose.
- Are contraindicated in patients with migraine treated with ergotamine.
- Should be stopped in patients who develop new:
    - Migraine with aura.
    - Focal neurological signs.

NB: Progesterone-only contraceptives are indicated in these circumstances [9] .

9.7 Complications of Migraine

Complications of chronic migraine include [7,20] :

- *Status migrainosus* is a debilitating migraine which lasts for > 72 hours.
- Persistent aura without infarction refers to aura symptoms lasting for ≥ 1 week, with no radiographic evidence of infarction.
- Migrainous infarction occurs when symptoms of aura last for ≥ 60 minutes and neuroimaging shows signs of infarction.
- Migraine is associated with increased risk of ischaemic stroke.

View Pathway

10 Cluster headache

10.1 Presentation

Typical features of a cluster headache [3,10,17,18,29] :

- Pain is defined as:
  - Unilateral (around the eye, above the eye, and along the side of the head/face).
  - Severe or very severe intensity.
  - Variable quality (can be sharp, boring, burning, throbbing, or tightening).
- Rapid onset and short-lasting – for 15-180 minutes.
- Patient is restless during an attack.
- Often a striking circadian or circannual rhythm.
- Attacks may be associated with migrainous features such as photophobia, phonophobia, nausea, and vomiting.

Highly characteristic and strictly ipsilateral autonomic features, including any of the following [10] :

- Red and/or watery eye.
- Nasal congestion and/or runny nose.
- Swollen eyelid.
- Forehead and facial sweating.
- Constricted pupil and/or drooping eyelid.

Paroxysmal hemicranias [17] :

- Are attacks with similar characteristics of pain and associated symptoms and signs to those of cluster headaches but are shorter-lasting, more frequent, and do not occur in males.

NB: Refer all patients with a first-episode of cluster headache to a neurologist to confirm the diagnosis [**R-GDG**].

10.2 Pharmacological Management

Acute Treatment:
Treatment may be initiated in primary care whilst awaiting referral [15]. Prescribe:

- 100% oxygen therapy (flow rate of at least 12 L/min with a non-rebreathing mask and a reservoir bag) for treatment of acute attacks [3,10] [**L2**]:
  - Particularly useful for patients:
    - Having ≥ 2 attacks a day, which require treatment.
    - Who respond poorly to treatment of acute attacks with a triptan.
    - Patients with a contraindication to triptans.
    - Who do not have COPD.
    - Arrange provision of both home and ambulatory oxygen.
- A subcutaneous triptan to be taken when required for treatment of acute attacks [10–12] [**L2**].
  - Especially useful to treat acute attacks that occur away from home when the patient does not have access to oxygen therapy:
    - E.g. subcutaneous sumatriptan:
      - The most effective relief of acute attacks of cluster headache.
      - Can be used up to twice daily.
  - Ensure the patient is offered an adequate supply of triptans calculated according to their history of cluster bouts, based on the manufacturer's maximum daily dose.

NB:

- Do not offer paracetamol, NSAIDs, opioids, or ergots for the acute treatment of cluster headache [10] [**L2**].
- Advise the patient to avoid drinking alcohol as this may trigger an attack during an active period of cluster headaches [15] .

Transitional Prophylaxis:
Transitional preventative treatment allows for rapid suppression of cluster attacks in the interim until the maintenance prophylaxis reaches therapeutic levels [13,14] .

Options for transitional prophylaxis are [1–3,13,14] :

- Corticosteroids:
    - Prednisolone – short term use:
        - 60 mg daily for 5 days, reduced by 10 mg every two days until discontinued.
        - May be used in patients with several attacks per day while verapamil prophylaxis is being established.
    - IV methylprednisolone can be used if preferred.
- Occipital nerve block – corticosteroid with lidocaine or other local anaesthetic. Up to 3 injection cycles can be performed over 10 days.

Maintenance Prophylaxis:
Maintenance prophylaxis is intended to provide sustained suppression over the expected cluster period [3,15] :

- Verapamil (first-line prophylaxis) [10] :
    - Use 240-480 mg daily.
    - Start at 80 mg TID and increase the dose as tolerated by 80 mg every two weeks.
    - Each dose increase above 480 mg requires an ECG to monitor for cardiac arrhythmias and a prolonged PR interval.
    - Seek specialist advice before starting if unfamiliar with its use for cluster headache, including advice on ECG monitoring [10] [**L2**, **RGA**].
- Lithium (second-line prophylaxis) [1–3] [**L2**]:
    - Target dose of 900-1200 mg daily.
    - May be used if verapamil is ineffective or contraindicated.
    - More adverse effects than verapamil.
    - Drug levels should be monitored.
    - Can be combined with verapamil but with caution because there is increased risk of toxicity without increase in the plasma concentration of lithium.
- Melatonin [3] [**L1, RGA**]:
    - Doses up to 10 mg per day may be beneficial in some patients.
- Monoclonal antibodies [30]:
    - Galcanezumab: 300mg subcutaneously monthly injection during the cluster period.

10.3 Transcutaneous Electrical Stimulation

Transcutaneous stimulation may be considered by neurology specialists in conjunction with pain specialists in selected patients in whom medical management is unsuccessful [31] .

11 Medication Overuse Headache

If taken too frequently, acute medications may worsen a pre-existing headache disorder. Patients who suffer from migraines and other chronic pain disorders appear to be particularly vulnerable to developing an MOH [3] .

11.1 Presentation

Clinical features include [1,2,10,13,14] :

- Headache that has developed or worsened while the patient is taking the following drugs for ≥ 3 months:
    - Taking for 10 days per month or more:
        - Triptans.
        - Opioids.
        - Ergots.
        - Combination analgesic medications containing barbiturates, caffeine, and/or codeine.
    - Taking for 15 days per month or more, either alone or in combination:
        - Paracetamol.
        - Regular-dose aspirin or other NSAIDs.

Typical history [1,2] :

- Episodic tension headaches or migraine that have gradually worsened over time.
- Increasing frequency of both headache and medication use.
- Relapse of headache at shortening periods following medication administration.
- Increasing strengths of analgesia required to bring relief.
- Variable location and character of headache.
- Pre-emptive use of medications.
- Symptoms improve after withdrawal of medication.

NB: A detailed history of all medications used, including over-the-counter medicines, should be recorded [1,2] [**L2**, **RGA**].

If a patient is presenting with MOH, consider evaluating for the following [3] :

- Psychiatric comorbidities e.g. [3] [**L2**, **RGA**]:
    - Depression and/or anxiety.
        - If present, these will need to be considered when planning management.
    - Drug dependence, both psychological and physical.
    - Use of inappropriate coping strategies.

11.2 Medication Withdrawal

Medication withdrawal should be attempted in all patients with MOH [3] [**L3**]. Medication withdrawal can usually be managed in primary care but referral should be considered for patients who [1,2,16,29] :

- Are taking a narcotic as their predominant treatment (usually need to be withdrawn slowly).
- Have significant coexisting conditions, including:
    - Psychological problems such as anxiety or depression, especially if the patient is thought to be at increased risk of suicide.
    - Physical problems, such as angina or diabetes, especially if the patient is elderly or frail.
- Are pregnant.

- Have painful conditions requiring continued symptomatic treatment.
- Are poorly motivated to stop symptomatic treatments.
- Have been unsuccessful at previous attempts to withdraw, or have relapsed**.**
- Continue to experience persistent daily headache after withdrawal.

Manage withdrawal from the overused medication by [1,2,10,16] :

- Explaining the cause of the patient's headache and its prognosis.
- Agreeing a date to begin treatment.
- Advising the patient to stop taking all overused acute headache medications for at least 1 month.
- Warn patients that withdrawal initially aggravates symptoms, so should be planned in advance to avoid unnecessary lifestyle disruption, e.g. by taking sick leave for 1-2 weeks.
- Recommending patients keep a diary to record symptoms and medication use during withdrawal.
- Prescribing an anti-emetic for use if required.
- Withdrawing ergots, triptans, and non-opioid drugs abruptly:
    - Abrupt withdrawal can lead to withdrawal headache usually lasting from 2-10 days (the average length is 3.5 days).
    - Withdrawal symptoms include:
        - Nausea.
        - Vomiting.
        - Hypotension.
        - Tachycardia.
        - Sleep disturbances.
        - Restlessness.
        - Anxiety and nervousness.

Consider prescribing prophylactic treatment for the underlying primary headache disorder in addition to withdrawal of overused medication [10] [**L2**].

NB: Do not routinely offer inpatient withdrawal for MOH [10] .

Consider specialist inpatient withdrawal of overused medication for patients [10] [**L2**]:

- Who are using strong opioids; or
- Who have relevant comorbidities; or
- In whom previous repeated attempts at withdrawal of overused medication have been unsuccessful.

11.3 Follow Up

Conduct a review [1,2,10] :

- After 2-3 weeks to ensure withdrawal is achieved.
- After 4-8 weeks to review the diagnosis and further management.

Most patients revert to their original headache type, e.g. migraine or TTH within 2 months – further follow up may be necessary during this time [1,2,16] :

- Overused medications may be reintroduced after 2 months, with explicit restrictions on frequency of use.

Relapse is common [1,2] :

- The majority of relapses occur within the first year after withdrawal.
- The main risk factors for relapse are:
    - Male sex.

- Intake of combined analgesic drugs.
- TTH as the primary headache disorder.

Consider treatment with behavioural therapies, e.g. [1,2] [**L2**]:

- CBT.
- Stress reduction.
- Biofeedback.

Manage failure to withdraw by [1,2] [**L2**]:

- Identifying and managing reasons for failure or relapse.
- Considering counselling.
- Referral to a neurologist for assessment and further management.

In some cases, withdrawal of overused medication does not lead to recovery from headaches. Manage such patients by [1,2] [**L2**]:

- Reassessing the diagnosis and/or considering specialist referral when chronic daily headache persists more or less unabated.
- Checking that medication overuse is not continuing – once this cause has been eliminated, consider the use of preventative medication.
- Considering referral to a pain management clinic for persistent daily headache after withdrawal.

12 Key Considerations for Patient Preferences

Patient preferences refer to patient perspectives, beliefs, expectations, and goals for health and life, and to the steps employed by individuals in assessing the potential benefits, harms, costs, and limitations of the management options in relation to one another. Patients may have preferences when it comes to defining their problems, identifying the range of management options and selecting or ranking the outcomes used to compare these options.

It is important for healthcare professionals to develop an understanding of the patient as an individual and the unique way in which each person experiences a condition and its impact on their life.

The following recommendations are therefore made for physicians and other healthcare professionals regarding general principles of patient care in Qatar:

- **Respect Patients:** Treat patients with respect, kindness, dignity, courtesy and honesty. Ensure that the environment is conducive to discussion and that the patient's privacy is respected, particularly when discussing sensitive, personal issues. Ask the patient how they wish to be addressed and ensure that their choice is respected and used.

- **Maintain Confidentiality:** Respect the patient's right to confidentiality and avoid disclosing or sharing patients' information without their informed consent. In this context, students and anyone not directly involved in the delivery of care should first be introduced to the patient before starting consultations or meetings, and let the patient decide if they want them to stay.

- **Clarify Third-Party Involvement:** Clarify with the patient at the first point of contact whether and how they like their partner, family members or carers to be involved in key decisions about their care or management and review this regularly. If the patient agrees, share information with their partner, family members or carers.

- **Obtain Informed Consent:** Obtain and document informed consent from patients, in accordance with MOPH policy and guidance.

- **Encourage Shared Decision Making:** Ensure that patients are involved in decision making about their own care, or their dependent's care, and that factors that could impact the patient's participation in their own consultation and care including physical or learning disabilities, sight, speech or hearing impairments and problems with understanding, reading or speaking English are addressed.

- **Disclose Medical Errors:** Disclose errors when they occur and show empathy to patients.

- **Ensure Effective Communication:** Explore ways to improve communication including using pictures, symbols or involving an interpreter or family members. Avoid using medical jargon. Use words the patient will understand and confirm understanding by asking questions.

- **Ensure Continuity of Care:** Provide clear and timely sharing of patient information between healthcare professionals especially at the point of any transitions in care.

13 Performance Measures

A list of performance measures is given in the table below. Healthcare organisations are encouraged to monitor service performance using the indicator definitions below [32] .

Number	Numerator	Denominator
HA01	The number of patients in the denominator who are diagnosed with a primary headache in whom brain imaging is performed.	Total number of patients aged 18 years and older who are diagnosed with a primary headache in the last 12 months.
HA02	The number of patients in the denominator who are advised to take combination therapy with a triptan and either an NSAID or paracetamol.	Total number of patients aged 18 years and older who have been diagnosed with migraine in the last 12 months.

Table 13.1: Performance Measures [32] .

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Appendix: Detailed Description of the Literature Search

A systematic search for existing literature on headache was performed in the period 16th-21st April 2020.

All existing references were evaluated and where necessary and applicable, the latest version of the specific manuscript was used to update the guideline and replace the older reference. The search for clinical practice guidelines on headache assessment and/or management was performed in the *PubMed* database and websites of relevant organisations and societies including the *International Headache Society,* the *European Federation of Neurological Societies,* the *FDA,* and the *BNF.* The present guideline is primarily based on *UK NICE*, ICSI, the *British Association for the Study of Headache (BASH)* and the *Scottish Intercollegiate Guidelines Network (SIGN)* guidelines and is supplemented with other relevant studies.

Peer-reviewed scientific publications were found in PubMed and via *Google Scholar* Internet search engine. Non-peer reviewed studies were identified in *bioRxiv*. Books were checked on *Amazon* and via *Google* and *Google Scholar* search engines.

The included publications were identified using the terms "*Headache*" and specified with the following terms in combinations:

guideline, definition, prevalence, red flag, presentation, investigation, management, prevention, treatment, primary, secondary, tension type, migraine, cluster, medication overuse, episodic, chronic, pregnancy, prophylaxis, referral, withdrawal, first line, second line, TES, NSAIS, paracetamol, ibuprofen, anti-emetic, triptan, amitriptyline, TCA, CBT, EMG, acupuncture, follow-up.

Figure A.1 on the next page demonstrates graphically the results of the search and application of exclusion criteria.

View Pathway

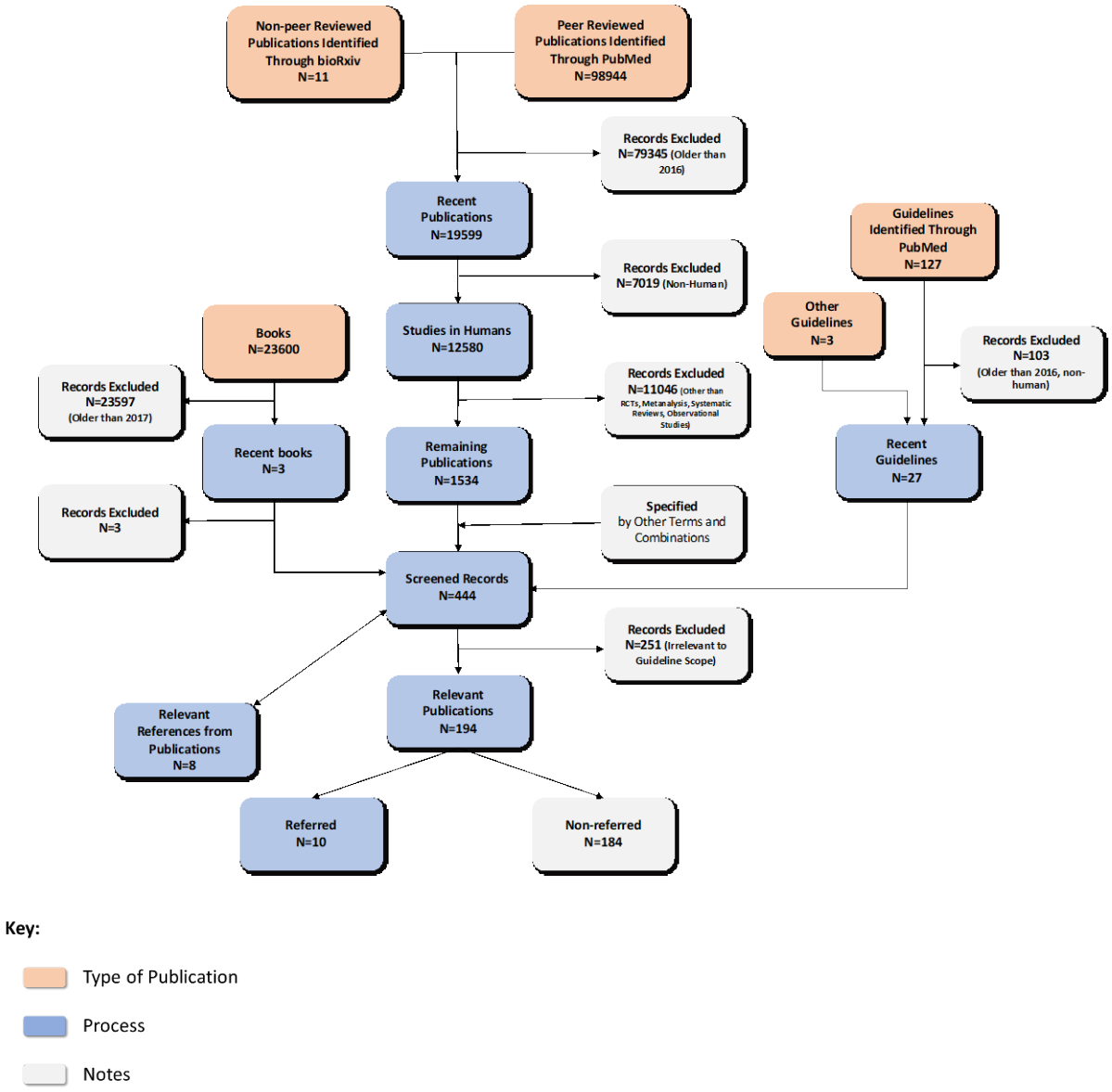

Fig A.1: Literature Search Results and Application of Exclusion Criteria.

Acknowledgements

The following individuals are recognised for their contribution to the successful development of the National Clinical Guidelines programme.

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