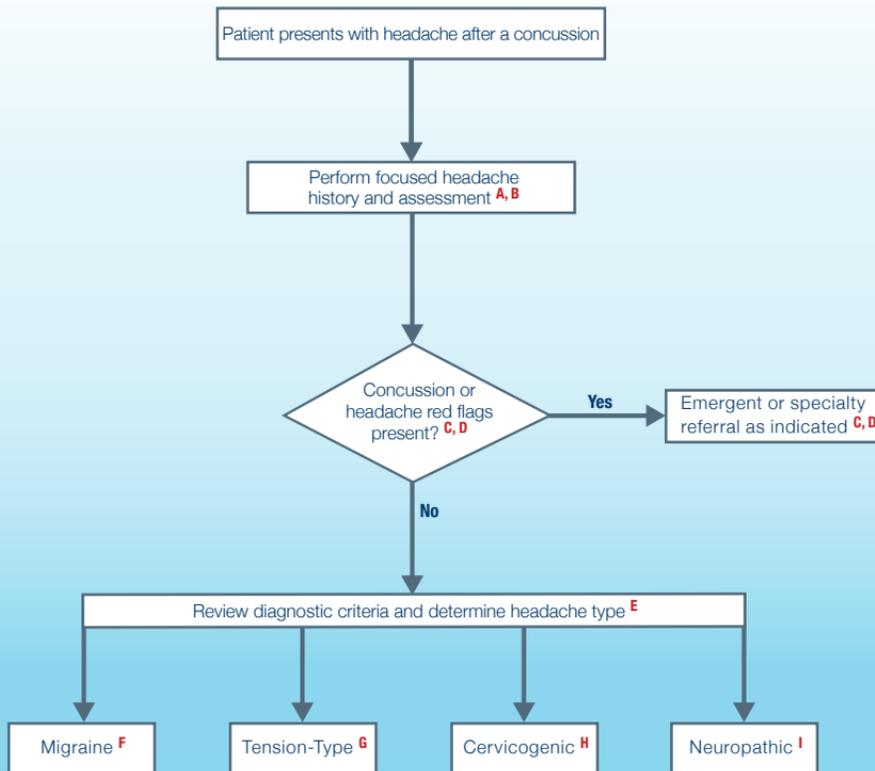


Management of Headache Following Concussion/mTBI:

Guidance for the Primary Care Manager in Deployed and Non-Deployed Settings



References*

A. Focused Headache History**

Areas of Assessment	Examples of Questions and Information to Collect
Symptoms	<ul style="list-style-type: none"> Persistent pain in head or neck after a concussion (Use of 0-10 scale is recommended, 1=barely present, 5=pain beginning to interfere with activity, and 10=worst imaginable pain)
Location	<ul style="list-style-type: none"> Right or left side Bilateral vs. unilateral Behind the eyes Face Stays in one place or moves around (radiates) Back or on top Forehead Neck
Description of Pain	<ul style="list-style-type: none"> Throbbing/pulsating Stabbing, sharp or dull/nagging Head, face or neck tenderness Pressing/squeezing Pain with chewing or opening mouth Decreased jaw movement
Frequency and Duration	<ul style="list-style-type: none"> Episodic or continuous Seconds, minutes, hours, days or constant
Associated Physical Symptoms	<ul style="list-style-type: none"> Vision changes (blindness, blurry vision, double vision, eyelid droop, tearing, eye redness, eye puffiness) Light, noise and odor sensitivity, nose blockage/discharge Nausea, loss of appetite, hunger, bowel changes Premonitory symptoms (fatigue, difficulty concentrating) Neck stiffness or pain Yawning Pallor Auras (visual, sensory or dysphasic speech disturbances) Numbness or tingling around lips, arms or legs
Headache History	<ul style="list-style-type: none"> Previous headache diagnosis Worsening headache History of temporal mandibular joint pain (TMJ) Family history Previous head trauma or TBI
Headache Triggers	<ul style="list-style-type: none"> Sleep (too much or too little) Physical activity Straining or coughing Missed meal Food Pregnancy Caffeine Muscle tension Emotional stress (during or after) Bending over Sexual activity Change in weather Alcohol Menstrual cycle Contraceptives
Social History	<ul style="list-style-type: none"> Headache interferes with family, work or school Substance use or abuse (caffeine, alcohol, tobacco), supplement use (vitamins, etc.)
Medication History	<ul style="list-style-type: none"> Previous medications used for headache prevention and rescue - Dosage, frequency and duration; failed medications Current medications, how often taking rescue medication or preventive medication
Co-morbid Conditions	<ul style="list-style-type: none"> Insomnia, depression, anxiety, obstructive sleep apnea
Questionnaires	<ul style="list-style-type: none"> Patient Health Questionnaire (PHQ), Neurobehavioral Symptom Inventory (NSI), Patient Global Impression of Change (PGIC), Headache Impact Test-6 (HIT)

* Complete references in the Management of Headache Following Concussion/Mild TBI: Guidance for Primary Care Management in Deployed and Non-Deployed Settings Clinical Recommendation

** Synthesis of information from: IHS, 2013¹⁰; Lucas, 2011³; Mayo Clinic, 2014b⁴⁵

B. Focused Headache Examination

Area of Assessment	Examples
Head, Neck and Face	<ul style="list-style-type: none">• Cranial nerve examination• Neck range of motion• Palpation of head and neck for trigger points or tenderness• Evaluate for papilledema
Ears, Nose and Throat	<ul style="list-style-type: none">• Examine the ears, nares• Palpate the face and percuss sinuses• TMJ examination
Other Neurological Examination	<ul style="list-style-type: none">• Reflexes• Sensory testing• Romberg testing• Pronator drift• Strength testing
Mental Status	<ul style="list-style-type: none">• Speech fluency• Word recall

C. Concussion Red Flags

1. Progressively declining level of consciousness (LOC)	8. Repeated vomiting
2. LOC > 5 minutes	9. Worsening headache
3. Declining neurological status	10. Pupil asymmetry
4. Glasgow Coma Scale (GCS) Score < 15	11. Double vision
5. Seizures	12. Slurred speech
6. Neurological deficit: motor or sensory	13. Unusual behavior
7. Cannot recognize people or disoriented to place	

Source: DVbic Concussion Management Algorithm for the Deployed Setting v4.1 (2014)

D. Headache Red Flags and Indications for Referral

Indications for Emergency Referral	Indications for Specialty Referral
Concussion red flags	Presence of systemic symptoms
Thunderclap headache (sudden onset)	Associated neurological symptoms
Sudden neurological deficit	Onset after age 50*
Persistent bleeding from nose, ears or scalp	Change in pattern of headache
Cranial fracture	Valsalva precipitation
Infection resulting from a penetrating injury	Postural aggravation
Cerebrospinal fluid leakage (nose or ear)	TMJ disorder
Intracranial hemorrhage on CT	ENT disorder
Papilledema	Anticoagulant therapy*

* Patients on anticoagulant therapy or over age 50 have an increased risk of chronic subdural hematoma. This demographic may need imaging with or without specialty referral based on the head trauma history and provider judgment. Refer to the DVbic CR, Neuroimaging following Mild Traumatic Brain Injury: Guidance in the Non-Deployed Setting; available at dvbic.dcoe.mil.²²

E. Characteristics of Headache Types

	Migraine	Tension-type	Cervicogenic	Headache Related to Neuropathic Pain	Medication Overuse*
Aura	Possible (15-33%)	No	No	No	No
Duration	4-72 hrs.	30 mins to 7 days	Some or all of day	Seconds, minutes, hours	Some or all of the day
Frequency	Episodic, variable	1-15 days/month, variable	Variable	Episodic, variable	Daily > 15 days each month
Site	Unilateral	Bilateral	Usually unilateral	Unilateral	Unilateral or bilateral
Pain Characteristics	Pulsating	Pressure/tightening	Tightening and/or burning	Burning, radiating	Pressing, tightening, pulsating
Pain Severity	Moderate/severe	Mild/moderate	Mild/moderate	Moderate/severe	Mild/moderate/severe
Aggravated by movement	Yes	No	Yes with movement of head	Yes	No
Nausea/Vomiting	Yes	No	No	No	No
Photophobia/Phonophobia	Yes	No	No	No	No

* PCM should consider the possibility of medication overuse headache (MOH) when criteria in Table E is present. Optimal treatment consists of discontinuation of the offending medications, acute treatment of withdrawal symptoms and pain, and use of analgesic medication as preventative treatment only when necessary.

F. Migraine Headache

Migraine without aura:

ICD-10-CM: G43.009

Migraine with aura:

ICD-10-CM: G43.109

Description:*

- A.** Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
- B.** Headache has at least two of the following characteristics:
 - 1. Unilateral location
 - 2. Pulsating quality
 - 3. Moderate or severe pain intensity
 - 4. Aggravation by, or causing avoidance of, routine physical activity (e.g., walking or climbing stairs)
- C.** During headache at least one of the following:
 - 1. Nausea and/or vomiting
 - 2. Photophobia or phonophobia
- D.** May or may not be accompanied by an aura (present in 15-33 percent of patients). Most common auras are visual, sensory, motor or speech and language

Non-pharmacologic Treatment^{41,42,43,44}

Education on lifestyle changes (Headache Management Fact Sheet available at dvbic.dcoe.mil)

- Environmental stimulus control & sleep hygiene
- Exercise
- Hydration
- Progressive return to activity
- Identification and avoidance of triggers
- Caffeine intake
- Nutrition
- Regular shift work
- Relaxation training
- Cognitive behavior therapy (CBT)
- Biofeedback

Pharmacologic Treatment

Acute/Abortive Agents:

Mild/moderate: Acetaminophen; NSAIDs[†] (ibuprofen, naproxen, >48 hours following concussion)

Severe: Triptans (e.g., sumatriptan, rizatriptan, zolmitriptan); dihydroergotamine (DHE) nasal spray^{††} (pre-treat with antiemetic); ketorolac nasal spray^{††} or intramuscular

Preventive Treatment:

First Line: Tricyclic antidepressants (TCA) (e.g., amitriptyline, nortriptyline); antiepileptics (e.g., topiramate, valproate^{††}); beta blockers (e.g., metoprolol)

Second Line: Serotonin norepinephrine reuptake inhibitors (SNRI) (e.g., venlafaxine); onabotulinum toxin A^{††} (Botox); (referral recommended)

* Modified from: International Headache Society (2013). The International Classification of Headache Disorders 3rd edition (beta version), *Cephalalgia* 33(629-808).¹¹

[†] U.S. Food and Drug Administration Agency (FDA) warning cautions that NSAIDs can increase the risk of heart attack, heart failure, or stroke in patients with or without heart disease, or risk factors for heart disease, even during the first few weeks of treatment though the risk appears highest with longer use at higher doses. Detailed information is located at <http://www.fda.gov/Drugs/DrugSafety/ucm451800.htm>.

^{††} These medications are not currently available in the deployed formulary.

G. Tension-type Headache

ICD-10-CM: G44.209

Description:^{*}

- A. Episodes of headache, typically bilateral, pressing or tightening in quality, of mild to moderate intensity, lasting minutes to days
- B. Pain does not worsen with routine physical activity and is not associated with nausea, but photophobia or phonophobia may be present
- C. Occurring for 1-15 days/month

Non-pharmacologic Treatment^{41,42,43,44}

Education on lifestyle changes (Headache Management Fact Sheet available at dvbic.dcoe.mil)

- Environmental stimulus control and sleep hygiene
- Exercise
- Hydration
- Progressive return to activity
- Caffeine intake
- Physical therapy
- Stress management
- Acupuncture
- Relaxation training
- CBT
- Biofeedback
- Massage

Pharmacologic Treatment

Acute/Abortive Agents:

First Line: Acetaminophen, NSAIDs[†]

Second Line: Acetaminophen/caffeine compounds

Preventive Treatment: Selective serotonin reuptake inhibitors (SSRI) (e.g., paroxetine, citalopram); SNRIs (e.g., venlafaxine); TCAs (e.g., amitriptyline, nortriptyline); tetracyclic antidepressants (e.g., mirtazapine)

^{*} Modified from: International Headache Society (2013). The International Classification of Headache Disorders 3rd edition (beta version), *Cephalalgia* 33(629-808).¹¹

[†] U.S. Food and Drug Administration Agency (FDA) warning cautions that NSAIDs can increase the risk of heart attack, heart failure, or stroke in patients with or without heart disease, or risk factors for heart disease, even during the first few weeks of treatment though the risk appears highest with longer use at higher doses. Detailed information is located at <http://www.fda.gov/Drugs/DrugSafety/ucm451800.htm>.

H. Cervicogenic Headache

ICD-10-CM: G44.841

Description:^{*}

- A. Headache caused by a condition of the cervical spine or soft tissue of the neck, usually, but not always, associated with neck pain
- B. Headache has developed in temporal relation to the head trauma
- C. Cervical range of motion is reduced
- D. Headache is made significantly worse by neck movement

Non-pharmacologic Treatment^{41,42,43}

- Acupuncture
- Physical therapy
- Greater occipital neurolysis/neurectomy (referral recommended)

Pharmacologic Treatment⁴⁸

Acute/Abortive Agents:

First Line: NSAIDs[†]

Second Line: Muscle relaxants if cervical spasms; trigger point injection (referral recommended)

Preventive Treatment: Antiepileptics (e.g., gabapentin, topiramate); TCAs (e.g., amitriptyline, nortriptyline); SNRIs (e.g., venlafaxine)

^{*} Modified from: International Headache Society. (2013). The International Classification of Headache Disorders 3rd edition (beta version), *Cephalalgia* 33(629-808).¹¹

[†] U.S. Food and Drug Administration Agency (FDA) warning cautions that NSAIDs can increase the risk of heart attack, heart failure, or stroke in patients with or without heart disease, or risk factors for heart disease, even during the first few weeks of treatment though the risk appears highest with longer use at higher doses.

Detailed information is located at <http://www.fda.gov/Drugs/DrugSafety/ucm451800.htm>.

I. Headache Related to Neuropathic Pain

ICD-10-CM: M792

Description:^{*}

- A. Pain associated with soft-tissue injury of the scalp or face
- B. May have superimposed lancinating component and may also be burning, deep, and aching
- C. There may be local tingling and numbness, hyperesthesia, hyperalgesia, allodynia (pain due to a non-noxious stimulus) or hyperpathia (particularly unpleasant, exaggerated pain response)
- D. Symptoms are long-lasting, typically persisting after resolution of the primary cause

Non-pharmacologic Treatment^{41,42,43}

- Relaxation therapy
- Physical therapy
- Acupuncture
- CBT
- Massage therapy

Pharmacologic Treatment⁵¹

Acute/Abortive Agents:

First Line: Acetaminophen or NSAIDs[†]

Second Line: Antiepileptics (e.g., gabapentin); TCAs (e.g., amitriptyline, nortriptyline)

Preventive Treatment: Antiepileptics (e.g., gabapentin); TCAs (e.g., amitriptyline, nortriptyline)

^{*} Modified from: International Headache Society (2013). The International Classification of Headache Disorders 3rd edition (beta version), *Cephalalgia* 33(629-808).¹¹

[†] U.S. Food and Drug Administration Agency (FDA) warning cautions that NSAIDs can increase the risk of heart attack, heart failure, or stroke in patients with or without heart disease, or risk factors for heart disease, even during the first few weeks of treatment though the risk appears highest with longer use at higher doses.

Detailed information is located at <http://www.fda.gov/Drugs/DrugSafety/ucm451800.htm>.

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