Treatment of Acute Non-Life-Threatening Headache: ED and Inpatient

What You Need to Know

- Hydration is a first line treatment for symptom relief
- Consider Neurology consult in patients with life-threatening etiologies, frequent ED visits or no response to typical therapies
- Opioids are **NOT** recommended for symptom relief
- Consider IV dexamethasone to prevent ED readmission

Patient reports headache

Screen for symptoms or conditions that suggest a potential life-threatening headache etiology

- New seizure, abnormal neurologic or vision exam that includes third nerve palsy, unilateral pupil dilation, and/or ptosis (eyelid drooping)
- Altered mental status
- Concern for subarachnoid hemorrhage (severe-rapid onset headache – "thunderclap headache", atypical or intractable headache)
  - Arrival by ambulance
  - Syncope at the onset of headache
  - History of recent significant head trauma
- Concern for meningitis (fever, meningismus, etc.)
- Concern for temporal arteritis (scalp tenderness to palpation, jaw claudication)
- Comorbid conditions that place patient at higher risk for life-threatening headache etiologies (HIV+, malignancy, pregnant, < 4 weeks postpartum) see OSUWMC Management of Severe Hypertension for the Obstetrical Patient Guideline
- Judgment of treating physician

Potential Life-Threatening Headache?

YES → Consider Head CT to R/O mass or bleed

Head CT Result?

- *NEGATIVE* → **Initial Treatment** See page 2
- *POSITIVE* → **Admit and Consult Neurology** Refer to appropriate guideline based on result of CT and location of bleed (Intracerebral Hemorrhage or Subarachnoid Hemorrhage)

NO → **Initial Treatment** See page 2

Initial Treatment See page 2

- *UNSUCCESSFUL* →
  - IV hydration - Rehydrate 20-30 minutes
  - Consider **re-dosing** medications on page 2 (See **Appendix**)
  - Consider other **adjunctive options** (See **Appendix**)
  - **ED patients:** consider Observation Unit

  UNSUCCESSFUL →
  - Consider Neurology consult if patient has:
    - Frequent ED visits (> 2 times/month)
    - Atypical pain
    - No response to typical management treatment
    - Cluster headache
  - Valproate sodium, and/or Magnesium sulfate, and/or consider other adjunctive options, if not already given (See **Appendix)**

  UNSUCCESSFUL →
  - Consider occipital nerve block if occipital tenderness is present
  - Eliminate secondary causes (see page 2)

  UNSUCCESSFUL → **Inpatient Admission**

- *SUCCESSFUL* →
  - Arrange for Primary Care follow-up
  - Consider Neurology follow-up *(see page 2)*
  - Consider providing antiemetic prescription

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Initial Treatment

- IV hydration as tolerated
- **Pharmacological management** - consider the following (see **Appendix**):
  - Oral analgesics (non-narcotic)
  - 5-HT if success in the past with 5-HT, headache onset < 4 hours, or presumed to be migraine (see Appendix for contraindications)
  - IV Prochlorperazine (Compazine®) or IV Haloperidol (Haldol®) **plus** IV Diphenhydramine (Benadryl®) or IV Benztropine (Cogentin®)
  - IV/IM Ketorolac (Toradol®)
    - Contraindicated if hemorrhage suspected, and/or cardiovascular or renal disease
  - Dexamethasone 10 mg IV/IM (to prevent recurrence for migraines only)
  - Triptans if success in the past with Triptans, headache onset < 4 hours, or presumed to be migraine (see Appendix for contraindications)
- ***Note:*** *Opiates are* ***strongly discouraged*** *due to the risk of dependence and resulting increased risk of rebound headache; however, consider opiates if patient has contraindications to other pharmacologic management options, or as rescue medication.*

Ambulatory Neurology Referral for Headaches

Note: It is important to establish a correct diagnosis of recurrent headaches including tension, migraine, and cluster. Moreover, it is important to establish a correct diagnosis of other head pain syndromes such as trigeminal neuralgia.

The following criteria can be used when making a diagnosis and determining the need for outpatient neurology referral:

- **Abnormal neurologic examination:**
  - Consider imaging studies: non-contrast brain MRI, preferred
- **New onset headaches and age > 50 years**
  - Consider imaging
  - Evaluate for temporal arteritis
- **Patients with prior headache history and/or:**
  - No or poor response to appropriate trial of symptomatic therapy
    - NSAIDs
    - ≥ 2 Triptans
  - **Chronic daily headache**
    - > 15 headache days per month with or without medication overuse
  - **Significant psychiatric comorbidity** such as:
    - Depression
    - Anxiety
    - Epilepsy
  - **Increased frequency and disability of headaches along with failed adequate trial of at least one standard preventive medication:**
    - Topiramate
    - Tri-cyclic antidepressant
    - Beta-blocker
    - Valproate
- **Prior migraine with aura history and frequent/prolonged aura, complicated or possible hemiplegic migraine**

Secondary Causes of Acute Headaches

- Hydrocephalus
- Encephalitis
- Acute Angel closure glaucoma
- Acute sinusitis
- Systemic infection
- Medication-induced headache

OSUWMC Resources

Order Sets

- ED: CDU/OBS HEADACHE [2367]
- ED: HEADACHE [2517]

Guidelines

- Management of Severe Hypertension for the Obstetrical Patient

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Quality Measures

- ED
  - Percent of patients who received IV hydration
  - Percent of patients who returned to ED within 3 days
  - Percent of patients who had two outpatient visits to ED, or one inpatient admission per month
- Inpatient
  - Percent of inpatients who received head CT for new onset severe headache
  - Percent of inpatients who received a Neurology consult for headache
  - Percent of inpatients who received occipital nerve block for headache

Guideline Approved

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Disclaimer: *Clinical practice guidelines and algorithms at The Ohio State University Wexner Medical Center (OSUWMC) are standards that are intended to provide general guidance to clinicians. Patient choice and clinician judgment must remain central to the selection of diagnostic tests and therapy. OSUWMC's guidelines and algorithms are reviewed periodically for consistency with new evidence; however, new developments may not be represented.*

APPENDIX: Acute Headache Medications

Drug	Dose	Re-Dose	Side Effects		Contraindications
Ketorolac (Toradol®)	15 – 30 mg IVP or 15 - 60 mg IM *For elderly patients and/ or < 50 kg, give 15 mg**	• May repeat in 6 hours • Do not exceed 120 mg in 24 hours	• Nausea • Epigastric pain • Dyspepsia • Dizziness	• Rash • Tinnitus • Edema, fluid retention • Acute renal failure	• Active peptic ulcer disease • Renal insufficiency • Active bleeding • Known hypersensitivity to NSAIDs • Cardiovascular disease
Dexamethasone (Decadron®)	10 mg IM or IVP over 3-5 minutes *Use cautiously in the elderly at the lowest possible dose (e.g., < 5 mg)**		• Fluid and electrolyte disturbances (hypokalemia) • Muscle weakness • Peptic ulcer • Burning or tingling in the perineal area after IV administration • Impaired wound healing • Convulsions • Psychiatric disturbances • Hyperglycemia • Increased intraocular pressure • Hypersensitivity reactions		
Dihydroergotamine (D.H.E. 45®)	1 mg SQ, IM, or IVP over 1 – 3 minutes or 1 mg IVPB over 30 minutes	• May repeat in 8 hours • Do not exceed 3 mg in 24 hours	• Coronary artery vasospasm • Transient myocardial ischemia • Ventricular tachycardia and ventricular fibrillation • Tachycardia • Coronary vasoconstriction • Leg cramps • Nausea/vomiting • Paresthesia • Miosis		• Should be avoided in older adults • Ischemic heart disease (angina, history of myocardial infarction) • Peripheral vascular disease • Uncontrolled hypertension • Pregnancy • Concurrent use of 5-HT_1 agonists within 24 hours • Patients with hemiplegic or basilar migraine ○ Basilar migraines are defined by three of the following features: diplopia, dysarthria, tinnitus, vertigo, transient hearing loss, or mental confusion • Severe hepatic or renal dysfunction • Known hypersensitivity to ergot alkaloids • Following vascular surgery • Sepsis or hypotension
*Older adult dosing adjustment or avoidance is appropriate. Please review specific guidance by line item for each medication.					

Drug	Dose	Re-Dose	Side Effects	Contraindications
Droperidol (Inaspine®)	0.625 - 2.5 mg IM or IVP over 2 – 5 minutes	• May repeat in 2 hours	• Extrapyramidal reactions • Drowsiness • Hypotension	• Caution in patients taking concurrent QT prolonging medications • Significant cardiovascular history • Electrolyte abnormalities
Caffeine	200 mg PO	• May repeat in 2-3 hours	• Tachycardia • Cardiac arrhythmias • Anxiety	
Haloperidol (Haldol®)	1.25 – 2.5 mg IM or IVP over 3 – 5 minutes *For elderly patients, initiate at lower dosage (e.g., 0.25 mg) over 3-5 minutes**	• May repeat in 2 hours • *Do not exceed 1 mg in 15 minutes; May repeat, but do not exceed 2 mg in 24 hours for older adults**	• Extrapyramidal reactions ○ consider administering with diphenhydramine or benztropine • Drowsiness • Hypotension, hypertension • Blurred vision	• Caution in patients taking concurrent QT prolonging medications • Significant cardiovascular history • Electrolyte abnormalities
Magnesium Sulfate	1 gram IVPB over 10 minutes	• May repeat in 2 hours	• Flushing, sweating • Hypotension • Depressed reflexes • Flaccid paralysis • Circulatory collapse	• Caution in renal insufficiency
Metoclopramide (Reglan®)	10 mg IM or IVP over 1 – 2 minutes *For elderly patients, initiate at lower end of dosage range, (e.g., 5 mg) and increase dose slowly and cautiously**	• May repeat in 4 hours	• Extrapyramidal reactions (give with diphenhydramine or benztropine) • Drowsiness, fatigue • Insomnia • Galactorrhea, amenorrhea • Hypotension, hypertension • Supraventricular tachycardia, bradycardia • Nausea, diarrhea • Urinary frequency, incontinence	• Pheochromocytoma • Epilepsy
Prochlorperazine (Compazine®)	10 mg IM or IVP over 2 min. *For elderly patients, initiate at lower end of dosage range, (e.g., 5 mg) and increase dose slowly and cautiously**	• May repeat in 4 hours • Do not exceed 40 mg in 24 hours	• Extrapyramidal reactions (give with diphenhydramine or benztropine) • Drowsiness, dizziness, blurred vision • Amenorrhea • Hypotension	• Known allergy to phenothiazines

*Older adult dosing adjustment or avoidance is appropriate. Please review specific guidance by line item for each medication.

Drug	Dose	Re-Dose	Side Effects		Contraindications
Sumatriptan (Imitrex®)	25 - 100 mg PO	• May repeat in 2 hours • Do not exceed 200 mg in 24 hours	• Chest tightness or pressure • Paresthesia • Jaw tightness or pressure • Dizziness • Nausea • Myalgia		• Uncontrolled hypertension • History of ischemic heart disease (myocardial infarction, angina) • History of peripheral vascular disease • History of cerebrovascular disease (ischemic and hemorrhagic) • Concurrent use of monoamine oxidase (MAO) inhibitors • Severe hepatic impairment • Concurrent use with ergotamine containing or ergot type medication • Hypersensitivity to sumatriptan • Use of dihydroergotamine within 24 hours
	6 mg SQ	• May repeat in 2 hours • Do not exceed 12 mg in 24 hours			
Valproate Sodium (Depacon®)	500 mg IVPB over 15 min. *For elderly patients, lower initial doses (e.g., 125 mg) are recommended due to decreased elimination and increased incidences**	• May repeat in 6 hours • Do not exceed 2,000 mg in 24 hours	• Rash • Dizziness • Nystagmus	• Somnolence • Tremor • Diplopia	• Pregnancy • Severe hepatic dysfunction • Known hypersensitivity to valproate sodium
*Older adult dosing adjustment or avoidance is appropriate. Please review specific guidance by line item for each medication.					