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)
- 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)
- Judgment of treating physician

Screening positive for life-threatening etiology:
- If patient in outpatient setting, send to ED
- If patient admitted, proceed with work-up and diagnostics
  - Strongly consider imaging in patients ≥ 50 Y/O with acute headache onset

PO hydration or IV hydration as tolerated
PO pharmacological management- consider the following:
1. IV Prochlorperazine (Compazine®) or IV Haloperidol (Haldol®) plus IV Diphenhydramine (Benadryl®) or IV Benztropine (Cogentin®)
2. IV/IM Ketorolac (Toradol®) (contraindicated if hemorrhage suspected and/or cardiovascular disease)
3. Oral analgesics (non-narcotic)
4. 5-HT if success in the past with 5-HT, headache onset < 4 hours, or presumed to be migraine (see page 3 for contraindications)

ED patients
- Consider Observation Unit
- See CDU Headache Protocol

Consider Neurology consult if patient has:
- Frequent visits (> 2 times/month)
- Atypical pain
- No response to typical management/treatment
  - Cluster headache
- Valproate sodium, and/or
- Magnesium sulfate, and/or
- Opiates,* and/or
- If not already given, consider other adjunctive options such as those listed in the Appendix (pages 3-4)

Consider re-dosing with another agent

Unsuccessful

Successful

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

Unsuccessful

Successful

*Note: Opiates are strongly discouraged due to the risk of dependence and resulting increased risk of rebound headache. Consider if patient has contraindications to other pharmacologic management options. Consider as rescue medication.
Outpatient 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.

**References**


**Order Sets**

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

**Quality Measures**

- Percent of patients who received IV hydration
- Percent of patients who returned to ED within 3 days
- Percent of patients who required opiates
- Percent of patients who had two outpatient visits to Neurology, ED, or inpatient admission per month

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- Erin Reichert, PharmD

**Guideline Approved**


**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.

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# APPENDIX

## Acute Headache Medications

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Side Effects</th>
<th>Contraindications</th>
</tr>
</thead>
</table>
| NSAIDs  
Ibuprofen (Advil®, Motrin®) | 400 – 800 mg PO q 4-6 hours. Do not exceed 3200 mg in 24 hrs. | 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 |
| Ketorolac (Toradol®) | 15 – 30 mg IVP or 15 - 60 mg IM (If > 65 Y/O and/or < 50 kg, give 15 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 | |
| Dexamethasone (Decadron®) | 10 mg IM or IVP over 3-5 minutes | 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 minute (may repeat in 1 hour - do not exceed 2 mg in 24 hours) | Coronary artery vasospasm  
Transient myocardial ischemia  
Ventricular tachycardia and ventricular fibrillation  
Tachycardia  
Coronary vasoconstriction  
Leg cramps  
Nausea/vomiting  
Paresthesia  
Miosis | Ischemic heart disease (angina, history of myocardial infarction)  
Peripheral vascular disease  
Uncontrolled hypertension  
Pregnancy  
Concurrent use of 5-HT₁ 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 |
| Ergotamine tartrate and caffeine (1 mg/100 mg) tablets (Cafergot®) | 2 tablets PO (may repeat 1 tablet in 30 minutes - do not exceed 6 tablets per attack) | 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 |
| Haloperidol (Haldol®) | 1.25 – 2.5 mg IM or IVP over 3 - 5 minutes | 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 | 1-2 grams IVPB over 30-60 minutes | Flushing, sweating  
Hypotension  
Depressed reflexes  
Flaccid paralysis  
Circulatory collapse | Caution in renal insufficiency |
## APPENDIX

### Acute Headache Medications (continued)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Side Effects</th>
<th>Contraindications</th>
</tr>
</thead>
</table>
| Metoclopramide (Reglan®)  | 10 mg IM or IVP over 1 – 2 minutes (may repeat 8 hours as needed) | • Extrapyramidal reactions (give with diphenhydramine or benzotropine)  
  • 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 minutes | • Extrapyramidal reactions (give with diphenhydramine or benzotropine)  
  • Drowsiness, dizziness, blurred vision  
  • Amenorrhea  
  • Hypotension | • Known allergy to phenothiazines |
| High-flow oxygen          | First line therapy when symptoms are consistent with cluster headache:  
  • Male  
  • Lacrimation  
  • Retroorbital headache  
  • Attacks that occur precisely at the same time every day or within as much as a week | | |
| Sumatriptan (Imitrex®)    | 25 - 100 mg PO may repeat in 2 hours (do not exceed 300 mg in 24 hours)  
  6 mg SQ may repeat in 1 hour (do not exceed 12 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  
  • Concurrent use of dihydroergotamine within 24 hours |
| Valproate Sodium (Depacon®) | 500 mg IVPB over 30 minutes | • Rash  
  • Dizziness  
  • Nystagmus  
  • Somnolence  
  • Tremor  
  • Diplopia | • Pregnancy  
  • Severe hepatic dysfunction  
  • Known hypersensitivity to valproate sodium |
APPENDIX

Acute Headache Medications *(continued)*

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Side Effects</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opiates</strong></td>
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<tr>
<td>Hydromorphone</td>
<td>.01 mg/kg IM, SQ or IVP over 3 – 5 minutes</td>
<td>• Respiratory depression</td>
<td>• Known hypersensitivity to hydromorphone, morphine, codeine</td>
</tr>
<tr>
<td>(Dilaudid®)</td>
<td></td>
<td>• CNS depression</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nausea/vomiting</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Constipation</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Urinary retention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hypotension (due to histamine release associated with morphine)</td>
<td></td>
</tr>
<tr>
<td>Morphine Sulfate</td>
<td>0.1 mg/kg IM, SQ or IVP over 5 minutes</td>
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<tr>
<td>(Morphine®)</td>
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<tr>
<td>Tramadol (Ultram®)</td>
<td>25 – 100 mg PO q4-6 hours</td>
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<td><em>(max 400 mg/day)</em></td>
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</table>

* Opiates are strongly discouraged due to the risk of dependence and increased risk of rebound headache. Consider if patient has contraindications to other pharmacologic management options.