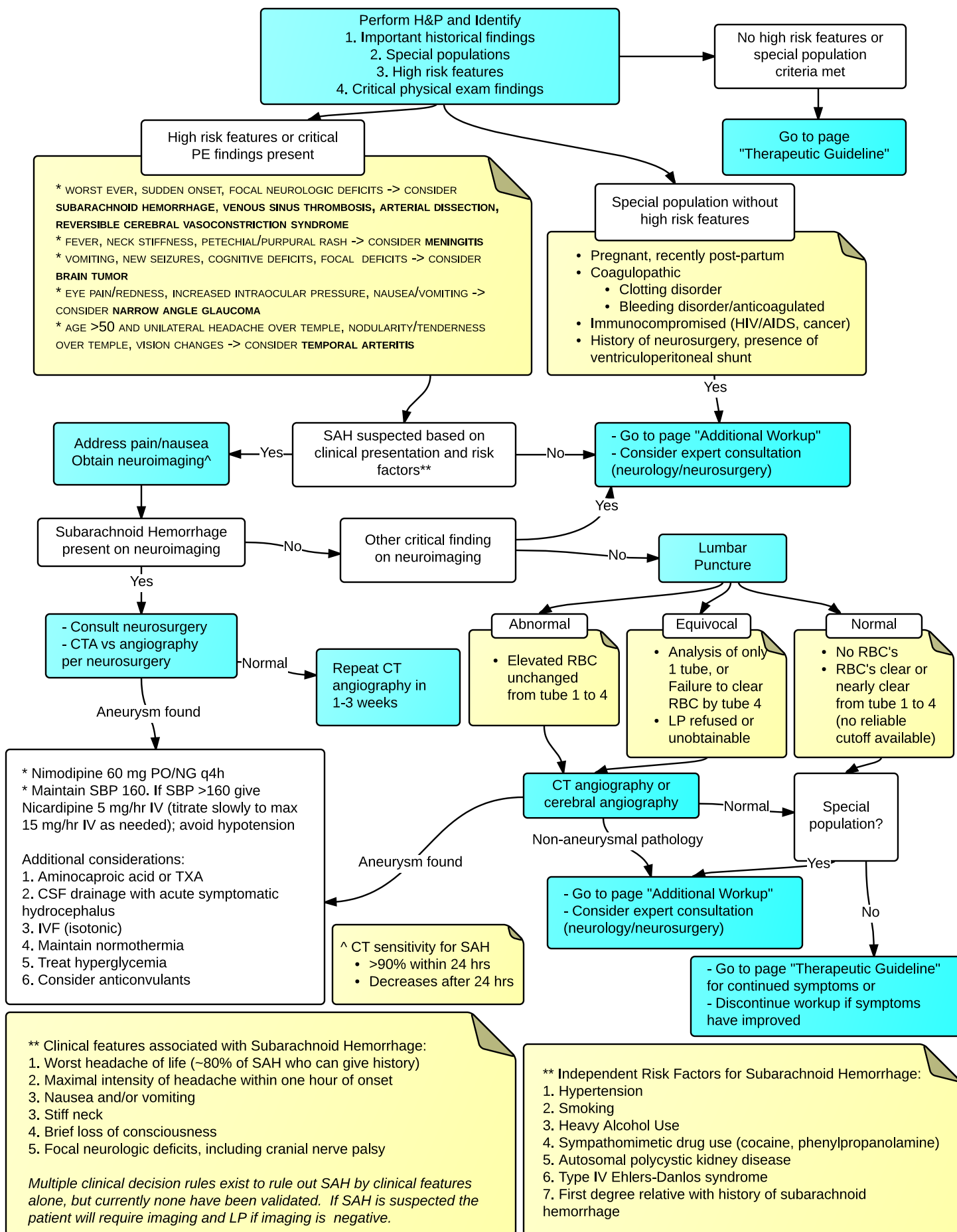


Approach to Nontraumatic Headache in an Adult (18+ years)



NONTRAUMATIC HEADACHE IN AN ADULT

IMPORTANT HISTORICAL FINDINGS

- Standard pain descriptors (quality, radiation, severity, timing, provoking/palliating factors)
- Associated symptoms (nausea/vomiting, neck pain, vision changes, seizure activity, neurologic changes)
- Exposure to toxins (i.e. carbon monoxide)
- Lumbar puncture within last 48 hours

IDENTIFY SPECIAL POPULATIONS

- Pregnant, recently post-partum
- Hypercoagulable
- Immunocompromised (HIV/AIDS, cancer)
- History of neurosurgery, presence of ventriculoperitoneal shunt

IDENTIFY HIGH RISK FEATURES OF DANGEROUS SECONDARY HEADACHES

- Sudden onset, thunderclap or maximal intensity at onset
- New onset neurologic deficit or cognitive impairment
- New quality or character to headache in patient with chronic/headaches
- Triggered by cough, sneeze or valsalva
- Orthostatic headache
- Symptoms of temporal arteritis or narrow angle glaucoma

CRITICAL PHYSICAL EXAM FINDINGS

- Neurologic: altered mental status, cranial nerve deficits, motor/sensory deficits, cerebellar dysfunction
- HEENT: nodularity/tenderness over temples, poor dentition, meningismus
- Eyes:
 - Fundoscopic exam: papilledema
 - Tonometry to assess intraocular pressure if eye pain present
 - Pupillary reactivity/extraocular movements

ACEP Clinical Policy Recommendations

Level B:

1. Patients presenting to the ED with headache and new abnormal findings in a neurologic examination (e.g., focal deficit, altered mental status, altered cognitive function) should undergo emergent noncontrast head computed tomography (CT).
2. Patients presenting with new sudden-onset severe headache should undergo an emergent head CT.
3. Human immunodeficiency virus (HIV)-positive patients with a new type of headache should be considered for an emergent neuroimaging study.
4. In patients presenting to the ED with sudden-onset, severe headache and a negative noncontrast head CT scan result, lumbar puncture should be performed to rule out subarachnoid hemorrhage.
5. Patients with a sudden-onset, severe headache who have negative findings on a head CT, normal opening pressure, and negative findings in cerebrospinal fluid (CSF) analysis do not need emergent angiography and can be discharged from the ED with follow-up recommended.

Level C:

1. Pain response to therapy should not be used as the sole diagnostic indicator of the underlying etiology of an acute headache.
2. Adult patients with headache and exhibiting signs of increased intracranial pressure (e.g., papilledema, absent venous pulsations on fundoscopic examination, altered mental status, focal neurologic deficits, signs of meningeal irritation) should undergo a neuroimaging study before having a lumbar puncture.
3. In the absence of clinical findings suggestive of increased intracranial pressure, a lumbar puncture can be performed without obtaining a neuroimaging study. (Note: A lumbar puncture does not assess for all causes of a sudden severe headache).

For all patients address headache pain and nausea. Utilize the "Therapeutic Guideline" for recommendations on accepted treatment options. Consider the following secondary headache diagnoses for headaches with concerning features as identified in the history and physical or on neuroimaging. Individualize diagnosis and treatment based on likely etiology of symptoms.

IMPORTANT SECONDARY HEADACHE CAUSES AND RED FLAG SYMPTOMS with Diagnostic and Treatment/Consultation Tips*

SUBARACHNOID HEMORRHAGE: Thunderclap (sudden, severe onset) headache, focal neurologic deficits
Dx/Tx: refer to primary guideline

MENINGITIS: Fever, neck stiffness, immunosuppressed, head/neck infection or instrumentation
Dx: CT head, Lumbar puncture
Tx: Early antibiotics, Corticosteroids

TEMPORAL ARTERITIS: Jaw claudication, vision changes, polymyalgia rheumatica
Dx: ESR/CRP
Tx: Systemic corticosteroids, refer for temporal artery biopsy

CARBON MONOXIDE POISONING: Waxing and waning headache, cluster of cases
Dx: Arterial co-oximetry
Tx: Supplemental oxygen on non-rebreather, consider hyperbaric oxygen therapy

ACUTE GLAUCOMA: Unilateral vision change, eye pain, and redness, nausea
Dx: Measure intraocular pressure
Tx: Topical ocular therapy, systemic osmotic agents, ophthalmology consult

CERVICAL ARTERY DISSECTION: Neck pain, trauma, stroke symptoms, Horner syndrome
Dx: CT angiography head/neck
Tx: Anticoagulation, neurology/neurosurgery consult

VENOUS SINUS THROMBOSIS: Pregnant/postpartum, hypercoagulable, oral contraceptive use
Dx: MR head, venography
Tx: Anticoagulation, neurosurgery consult

INTRACEREBRAL TUMOR: Chronic progressive headaches, papilledema, history of malignancy, worse in the morning, new-onset >50 y
Dx: CT head Tx: ICP lowering tx if needed (elevate HOB, restrict IVF, mannitol, hyperventilate), consult neurosurgery

CEREBELLAR INFARCTION: Ataxia, dysmetria, vertigo, vomiting
Dx: CT head (rule out edema and mass effect)
Tx: Neurology/neurosurgery consult

IDIOPATHIC INTRACRANIAL HYPERTENSION: Papilledema, worse when lying flat, obesity
Dx: Lumbar puncture
Tx: CSF drainage, neurology referral

PITUITARY APOPLEXY: Hypotension, hypoglycemia, hyponatremia, visual field deficit, history of pituitary tumor
Dx: CT head, MR brain
Tx: Neurosurgery consult

PRE-ECLAMPSIA: Hypertension, proteinuria, non-dependent edema, pregnancy or up to 4 weeks post-partum
Dx: CBC, Chemistry panel with LFT's (CMP), Coagulation studies (PT/PTT)
Tx: IV Magnesium, obstetrics consult

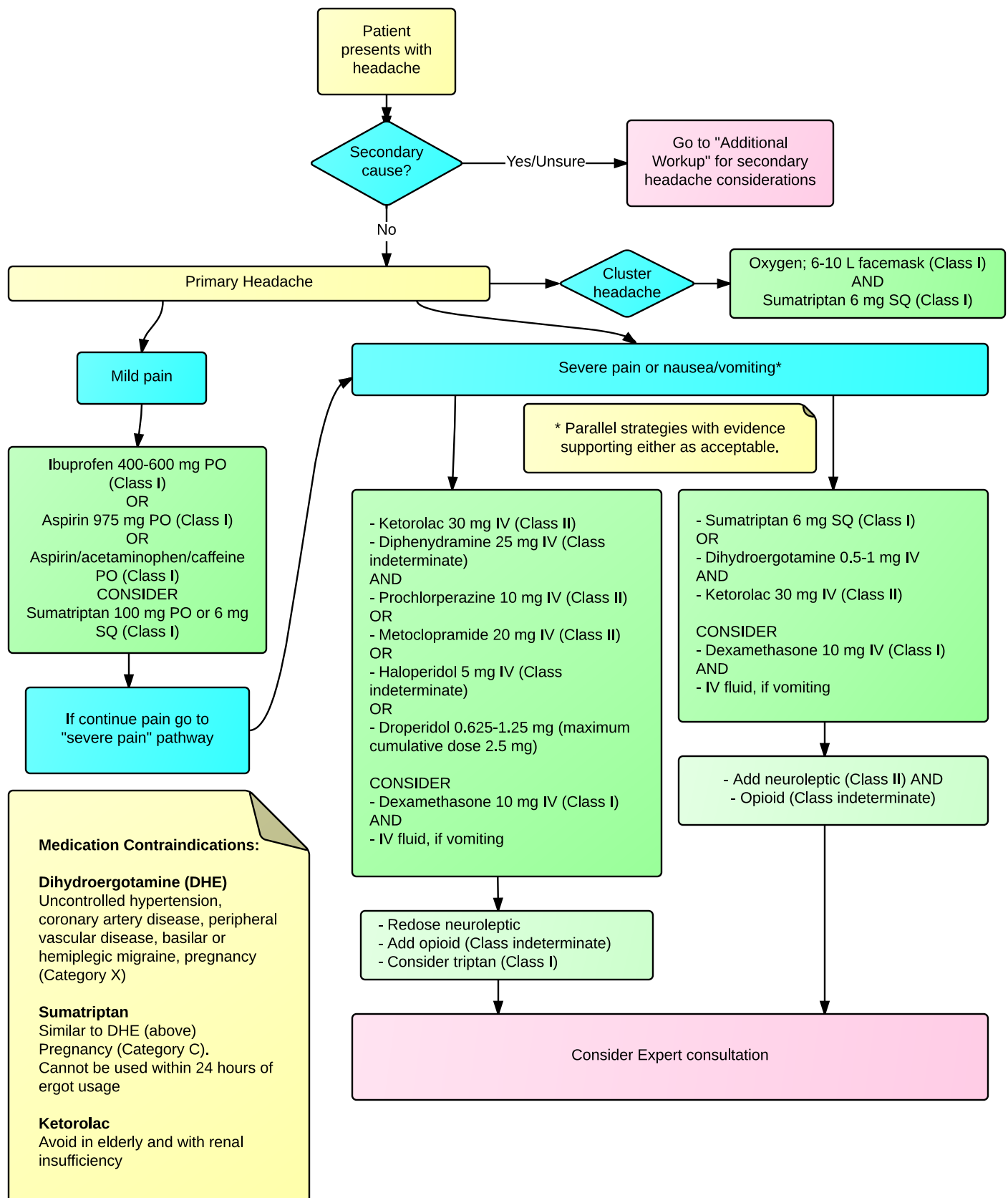
HYPERTENSIVE ENCEPHALOPATHY: Altered mental status, hypertensive, neurologic signs in a nonanatomic distribution
Dx: CT head, ECG, BMP
Tx: IV Labetalol, IV Nitroglycerin drip

SUBDURAL HEMATOMA: Head trauma, coagulopathic, elderly
Dx: CT head
Tx: Neurosurgery consult

INTRACEREBRAL HEMORRHAGE: Hypertension, cerebral aneurysm, arteriovenous malformation
Dx: CT head
Tx: Neurology, neurosurgery consult

SPONTANEOUS INTRACRANIAL HYPOTENSION: Thunderclap headache, HA/dizziness with standing, improves when lying flat, connective tissue disorder
Dx: CT head, MR brain, Lumbar puncture
Tx: Neurology consult, bed rest, oral hydration, caffeine, epidural blood patch

*Diagnostic/Therapeutic strategies only provide tips for appropriate management and do not provide comprehensive care plans. If you have questions about management seek neurology or neurosurgical consultation for assistance.
Adapted from: Singh A, Soares WE. Management Strategies for Acute Headache in the Emergency Department. Emergency Medicine Practice. Volume 14, Number 16. June 2012.
Swadron, Stuart P. "Pitfalls in the Management of Headache in the Emergency Department." Emergency Medicine Clinics of North America 28.1 (2010): 127-47. Web.



Adapted with modifications from: Singh A, Soares WE. Management Strategies for Acute Headache in the Emergency Department. Emergency Medicine Practice. Volume 14, Number 16. June 2012.

Maresh JP, Holmes J, Perron A. Version 1.2, Created 1/2014, Updated 5/2015.

Guideline Evidence

Guideline Topic:	Headache			
Author:	Jordan Maresh			
Date of Creation:	4/17/15	Sugg Update:	2017	
Search Criteria:	Post-traumatic headache; Headache; Headache Disorders, Secondary; Headache Disorders, Primary; Tension-Type Headache; Headache Disorders; Post-dural Puncture Headache			
Databases:	MEDLINE			
Key Guidelines (Dates)	ACEP Clinical Policy 2008; AHA/ASA Guidelines for Mgmt of SAH 2012; AAN Migraine Management 2000 (dosing per EM Practice Review 2012)			

#	Recommendation	Source	Classification	Evidence
1	Pain response to therapy should not be used as sole diagnostic indicator of the underlying etiology of an acute	ACEP CP		C
2	Patients presenting to the ED with headache and new abnormal findings in a neurologic examination should	ACEP CP		B
3	Patients presenting with new sudden-onset severe headache should undergo an emergent head CT	ACEP CP		B
4	HIV-positive patients with a new type of headache should be considered for an emergent neuroimaging study.	ACEP CP		B
5	Patients who are older than 50 years and presenting with a new type of headache but with a normal neurologic	ACEP CP		C
6	In patients presenting to the ED with sudden-onset, severe headache and a negative noncontrast head CT scan	ACEP CP		B
7	Adult patients with headache and exhibiting signs of increased intracranial pressure should undergo a	ACEP CP		C
8	In the absence of clinical findings suggestive of increased intracranial pressure, a lumbar puncture can be performed	ACEP CP		C
9	Patients with a sudden-onset, severe headache who have negative findings on a head CT, normal opening pressure,	ACEP CP		B
RISK FACTORS FOR AND PREVENTION OF aSAH				
10	Treatment of high blood pressure with antihypertensive medication is recommended to prevent ischemic stroke,	AHA/ASA	I	A
11	Tobacco use and alcohol misuse should be avoided to reduce the risk of aSAH.	AHA/ASA	I	B
12	Hypertension should be treated, and such treatment may reduce the risk of aSAH	AHA/ASA	I	B
13	In addition to the size and location of the aneurysm and the patient's age and health status, it might be reasonable	AHA/ASA	II b	B
14	After any aneurysm repair, immediate cerebrovascular imaging is generally recommended to identify remnants or	AHA/ASA	I	B
NATURAL HISTORY AND OUTCOME OF aSAH				
15	The initial clinical severity of aSAH should be determined rapidly by use of simple validated scales (eg, Hunt and	AHA/ASA	I	B
16	The risk of early aneurysm rebleeding is high and is associated with very poor outcomes. Therefore, urgent	AHA/ASA	I	B
CLINICAL MANIFESTATIONS AND DIAGNOSIS OF aSAH				
17	aSAH is a medical emergency that is frequently misdiagnosed. A high level of suspicion for aSAH should	AHA/ASA	I	B
18	Acute diagnostic workup should include noncontrast head CT, which, if nondiagnostic, should be followed by lumbar	AHA/ASA	I	B
19	CTA may be considered in the workup of aSAH. If an aneurysm is detected by CTA, this study may help guide	AHA/ASA	II b	C

#	Recommendation	Source	Classification	Evidence
20	MRI may be reasonable for the diagnosis of aSAH in patients with a nondiagnostic CT scan, although a	AHA/ASA	II b	C
21	Digital subtraction angiography with 3-dimensional rotational angiography is indicated for detection of aneurysm in	AHA/ASA	I	B
MEDICAL MEASURES TO PREVENT REBLEEDING AFTER aSAH				
22	Between the time of aSAH symptom onset and aneurysm obliteration, blood pressure should be controlled with a	AHA/ASA	I	B
23	The magnitude of blood pressure control to reduce the risk of rebleeding has not been established, but a decrease in	AHA/ASA	II a	C
24	For patients with an unavoidable delay in obliteration of aneurysm, a significant risk of rebleeding, and no	AHA/ASA	II a	B
SURGICAL AND ENDOVASCULAR METHODS FOR TREATMENT OF RUPTURED CEREBRAL ANEURYSMS				
25	Surgical clipping or endovascular coiling of the ruptured aneurysm should be performed as early as feasible in the	AHA/ASA	I	B
26	Complete obliteration of the aneurysm is recommended whenever possible.	AHA/ASA	I	B
27	Determination of aneurysm treatment, as judged by both experienced cerebrovascular surgeons and endovascular	AHA/ASA	I	C
28	For patients with ruptured aneurysms judged to be technically amenable to both endovascular coiling and	AHA/ASA	I	B
29	In the absence of a compelling contraindication, patients who undergo coiling or clipping of a ruptured aneurysm	AHA/ASA	I	B
MANAGEMENT OF CEREBRAL VASOSPASM AND DCI AFTER aSAH				
30	Oral nimodipine should be administered to all patients with aSAH. (It should be noted that this agent has been shown	AHA/ASA	I	A
31	Maintenance of euvolemia and normal circulating blood volume is recommended to prevent DCI.	AHA/ASA	I	B
32	Prophylactic hypervolemia or balloon angioplasty before the development of angiographic spasm is not	AHA/ASA	III	B
33	Perfusion imaging with CT or MR can be useful to identify regions of potential brain ischemia	AHA/ASA	II a	B
34	Induction of hypertension is recommended for patients with DCI unless blood pressure is elevated at baseline or	AHA/ASA	I	B
35	Cerebral angioplasty and/or selective intra-arterial vasodilator therapy is reasonable in patients with	AHA/ASA	II a	B
MANAGEMENT OF HYDROCEPHALUS ASSOCIATED WITH aSAH				
36	aSAH-associated acute symptomatic hydrocephalus should be managed by cerebrospinal fluid diversion (EVD	AHA/ASA	I	B
37	aSAH-associated chronic symptomatic hydrocephalus should be treated with permanent cerebrospinal fluid	AHA/ASA	I	C
MANAGEMENT OF SEIZURES ASSOCIATED WITH aSAH				
38	The use of prophylactic anticonvulsants may be considered in the immediate posthemorrhagic period.	AHA/ASA	II b	B
39	The routine long-term use of anticonvulsants is not recommended.	AHA/ASA	III	B
40	Long-term use of anticonvulsants may be considered for patients with known risk factors for delayed seizure	AHA/ASA	II b	B
MANAGEMENT OF MEDICAL COMPLICATIONS ASSOCIATED WITH aSAH				
41	Administration of large volumes of hypotonic fluids and intravascular volume contraction is not recommended after	AHA/ASA	III	B
42	Monitoring volume status in certain patients with recent aSAH by some combination of central venous pressure,	AHA/ASA	II a	B
43	Aggressive control of fever to a target of normothermia by use of standard or advanced temperature modulating	AHA/ASA	II a	B
44	Careful glucose management with strict avoidance of hypoglycemia may be considered as part of the general	AHA/ASA	II b	B
45	The use of pRBC transfusion to treat anemia might be reasonable in patients with aSAH who are at risk of	AHA/ASA	II b	B

#	Recommendation	Source	Classification	Evidence
46	Heparin-induced thrombocytopenia and deep venous thrombosis, although infrequent, are not uncommon	AHA/ASA	I	B
MANAGEMENT OF MIGRAINE HEADACHE				
47	Ibuprofen 400-600 mg PO	AAN / EBM		A
48	Aspirin 1000 mg PO	AAN / EBM		A
49	Naproxen 500-825 mg PO	AAN / EBM		B
50	Ketorolac 15-30 mg IV	AAN / EBM		B
51	Acetaminophen 900-1000 mg PO	AAN / EBM		B
52	Aspirin/acetaminophen/caffeine 500/500/130 mg PO	AAN / EBM		A
53	Dihydroergotamine IV 0.5-1 mg IV	AAN / EBM		B
54	Chlorpromazine 0.1 mg/kg IV	AAN / EBM		B/C
55	Metoclopramide 20 mg IV	AAN / EBM		B
56	Prochlorperazine 10 mg IV	AAN / EBM		B
57	Sumatriptan SQ 6 mg SQ	AAN / EBM		A
58	Sumatriptan PO 100 mg PO	AAN / EBM		A
59	Opioids – variable dosing	AAN / EBM		B
60	Dexamethasone 6-10 mg PO/IV	AAN / EBM		C
61	Naratriptan, rizatriptan, sumatriptan, and zolmitriptan. Triptans are effective and relatively safe for the acute	AAN		A
62	Initial treatment with any triptan is a reasonable choice when the headache is moderate to severe or in migraine of	AAN		C
63	Patients with nausea and vomiting may be given IN or SC sumatriptan	AAN		C
64	Ergotamine PO/PR (and caffeine combination) may be considered in the treatment of selected patients with	AAN		B
65	DHE nasal spray is safe and effective for the treatment of acute migraine attacks and should be considered for use in	AAN		A
66	DHE SC/IV/IM and nasal spray may be given to patients with nausea and vomiting.	AAN		C
67	DHE SC/IM and nasal spray are reasonable initial treatment choices when the headache is moderate to	AAN		C
68	DHE IM, SC may be considered in patients with moderate to severe migraine.	AAN		B
69	DHE IV plus antiemetics IV is an appropriate treatment choice for patients with severe migraine.	AAN		B
70	Metoclopramide IM/IV is an adjunct to control nausea.	AAN		C
71	Metoclopramide may be considered as IV monotherapy for migraine pain relief.	AAN		B
72	Prochlorperazine IV, IM and PR may be a therapeutic choice for migraine in the appropriate setting.	AAN		B
73	Prochlorperazine PR is an adjunct in the treatment of acute migraine with nausea and vomiting.	AAN		C
74	Chlorpromazine IV may be a therapeutic choice for migraine in the appropriate setting.	AAN		B
75	Acetaminophen , alone, is not recommended for migraine.	AAN		B
76	NSAIDs (oral) and combination analgesics containing caffeine are a reasonable first-line treatment choice for	AAN		A

#	Recommendation	Source	Classification	Evidence
77	Ketorolac IM is an option that may be used in a physician-supervised setting, although conclusions regarding clinical	AAN		C
78	Limit and carefully monitor butalbital-containing analgesics use based on overuse, medication-overuse headache, and	AAN		B
79	Parenteral opiates are a rescue therapy for acute migraine when sedation side effects will not put the patient at risk	AAN		B
80	Consider parenteral and oral opioid combination use in acute migraine <i>only</i> when the risk of abuse has been	AAN		A
81	Corticosteroids (dexamethasone or hydrocortisone) are a treatment choice for rescue therapy for patients with status	AAN		C