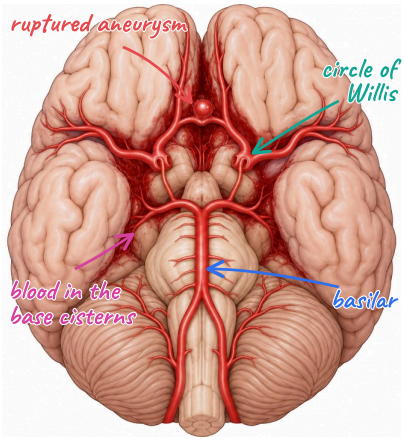
ER BASICS · ONE-PAGER

Subarachnoid Hemorrhage

Aneurysmal SAH: diagnosis, grading, rebleeding, nimodipine, vasospasm and DCI, sodium and nursing care

25 sources + more detail
erbasics.com/sheets/sah.html
checked Oct 2026

ASAH Aneurysmal SAH: the timeline



1 Recognize and diagnose

Thunderclap headache (worst ever, maximal at onset), often with vomiting, stiff neck, brief LOC or a seizure. A sentinel headache precedes 10–43% (AHA/ASA 2023). New third-nerve palsy with a dilated pupil: think posterior communicating aneurysm.

Within 6 h, no new deficit and a negative high-quality CT read by a neuroradiologist: LP can be skipped (2a).

TEST	ROLE (AHA/ASA 2023)
Noncontrast CT	First; within 6 h of onset, sensitivity about 99%
Lumbar puncture	CT negative and over 6 h, or new deficit: xanthochromia
CT angiography	Finds most aneurysms; can miss those under 3 mm
Catheter angiography	Diffuse SAH with negative CTA; plans treatment

2 Grading

IV–V is poor grade, yet about 40% of treated patients recover well (AHA/ASA 2023).

GRADE	HUNT AND HESS	WFNS
I	None, or mild headache and slight stiff neck	GCS 15, no motor deficit
II	Moderate to severe headache, stiff neck; cranial nerve palsy only	GCS 13–14, no deficit
III	Drowsy, confused or mild focal deficit	GCS 13–14 with deficit
IV	Stupor, hemiparesis	GCS 7–12
V	Deep coma, extensor posturing	GCS 3–6

Modified Fisher (CT): 0 no blood; 1 thin SAH; 2 thin SAH with IVH; 3 thick SAH; 4 thick SAH with IVH. Vasospasm risk rises with grade; 4 is highest.

3 Until the aneurysm is secured

- Rebleeding (10–15%, half within 6 h) is often fatal: secure early, preferably within 24 h (AHA/ASA 2023, ESO 2026).
- BP: frequent checks; nicardipine, clevidipine or labetalol; avoid MAP below 65 and swings. No proven target; many units keep SBP below 160, some below 140 (ESO 2026 consensus: about 160, lowered gradually).
- Reverse anticoagulants now: warfarin, 4F-PCC plus IV vitamin K; dabigatran, idarucizumab; factor Xa inhibitors, 4F-PCC; heparin, protamine.
- No routine tranexamic acid (ULTRA; AHA/ASA 3: No Benefit).
- Treat pain and nausea; HOB 30°, quiet room, stool softener.
- Symptomatic acute hydrocephalus (20–30%): urgent EVD; avoid brisk drainage before securing.

A neurosurgeon and an interventionalist choose together. Coiling is preferred when both suit (ISAT: dead or dependent at 1 year, coiled 23.5% vs clipped 30.9%); clipping suits a large hematoma that needs evacuation.

4 Nimodipine and delayed cerebral ischemia

TOPIC	KEY POINTS
Nimodipine	60 mg PO or per tube every 4 h for 21 days, started within 96 h
If BP falls	Split to 30 mg every 2 h; treat the BP; hold only by order
Window	Days 3–14, peak risk days 6–10; DCI in about 30%
DCI	New focal deficit or GCS drop of 2 or more for at least 1 h
Detect	Hourly exams; TCD MCA ≥120 cm/s, Lindegaard ≥3 (≥200 severe); CTA/CTP
Treat	Euvolemia; induced hypertension once secured; endovascular rescue
No benefit	Prophylactic triple-H (harmful), statins, IV magnesium, clazosentan

⚠ **SAFETY** Never give nimodipine IV: injected capsule contents have caused cardiac arrest and death (boxed warning). Draw it into an oral syringe labeled not for IV use; flush the tube with 30 mL saline.

5 Sodium, heart and other complications

AHA/ASA 2023: mineralocorticoids 2a, phenytoin prophylaxis 3: Harm, VTE prophylaxis after securing Class 1.

PROBLEM	CLUES	ACTION
Hyponatremia (27–57%)	Salt wasting or SIADH; natriuresis, polyuria	Isotonic or 3% saline, fludrocortisone; never fluid-restrict
Stunned myocardium	Troponin, deep T inversions, long QT, wall motion loss	ECG, troponin, echo; inotrope if low output; reversible
Seizures (8–15%)	At onset; depressed or fluctuating exam	Onset seizure: drug ≤7 days; no phenytoin prophylaxis; cEEG
Fever	Infection or central; worse outcome	Seek infection; antipyretics; cooling unproven
Glucose	High and low both harm	Avoid both (many units 140–180)
VTE (4–24%)	Immobility	SCDs; SC heparin once the aneurysm is secured

6 Nursing priorities

- Neuro checks (GCS or NIHSS, pupils, speech, drift), often hourly through day 14; report a GCS drop of 2 or a new deficit at once.
- Know the BP band for the phase: lower before securing, no hypotension after, higher only by order for DCI.
- Strict I&O, daily weight, sodium at least daily; isotonic fluids, never hypotonic.
- EVD: level at the tragus, re-level after moves, report output or color changes.
- Swallow screen before oral intake; early mobility once secured (AHA/ASA 2023).
- Teach: nimodipine continues the full 21 days, even after discharge.

💡 **EXAM TIP** Exams test the timeline: rebleeding first (lower BP, secure), hydrocephalus early, vasospasm days 3–14 (euvolemia, raise BP), and saline, not fluid restriction, for low sodium.

MORE Pathophysiology and natural history

Most nontraumatic SAH comes from a ruptured saccular aneurysm at the circle of Willis. Incidence is about 6.1 per 100,000 person-years worldwide and 11.4 in the US; women carry 1.3 times the risk, rising after 55 (AHA/ASA 2023). Hypertension and smoking are the modifiable risks; 12% of people with two or more affected first-degree relatives harbor an aneurysm.

At rupture, ICP can surge toward arterial pressure and briefly halt cerebral perfusion, causing sudden collapse, cardiac arrest (about 4%) and the global early brain injury of the first 72 h. Cisternal blood then blocks CSF absorption, irritates cortex and, as it breaks down over days, drives arterial narrowing.

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