Subarachnoid Hemorrhage

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

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

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.

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.

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.

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

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.

Sources (25) are listed with links at icubasics.com/sheets/sah.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. ICU Basics is an independent study aid not affiliated with any certifying body.