⬜ Subarachnoid Hemorrhage Volume: Key Points

Estimating the volume of a subarachnoid hemorrhage (SAH) is trickier than for intraparenchymal or intraventricular bleeds due to its irregular, diffuse distribution in the subarachnoid space. Here's a comprehensive look at how it's approached:

⬜ 1. Why It's Hard to Measure

- SAH spreads along cisterns, sulci, and fissures, making it non-confluent and irregular.
- There's no standard "ABC/2" method for SAH like there is for ICH.

⬜ 2. Methods of Estimation

A. Visual Grading Systems (most commonly used)

➤ **Fisher Scale (Classic)** Used to predict vasospasm, not volume per se:

- Grade 1: No SAH
- Grade 2: Diffuse thin SAH (<1 mm)
- Grade 3: Localized clot and/or vertical layer >1 mm
- Grade 4: Any SAH with intraventricular hemorrhage

➤ **Modified Fisher Scale** More detailed, still semiquantitative, and slightly better correlated with vasospasm risk.

B. Hijdra Score

A more granular scale scoring 10 basal cisterns and sulci from 0 (no blood) to 3 (completely filled with blood), total score 0–30.

C. Volumetric Estimation Using Imaging Software

Manual or semi-automated segmentation of hyperdensities on CT using tools like:

- 3D Slicer
- OsiriX
- ITK-SNAP

Pros: → Results in volume in mL

Cons: → Time-consuming → Not routinely done in clinical practice → Mainly used in research

⬜ 3. Clinical Reference Values

SAH Classification	Estimated Volume	Prognostic Value
Small/localized	< 5 mL	Lower risk
Moderate	5–15 mL	Intermediate risk
Large	>15–20 mL	Higher risk of vasospasm, poor outcome

⬜ 4. Radiological AI Tools

Some modern centers use AI-based algorithms to:

- Automatically segment blood in SAH
- Estimate volumes
- Correlate with outcome scores

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Last update: **2025/03/31 21:20**