

Inhalation Anesthetics

YOU SHOULD BE ABLE TO

- ✓ Predict how solubility, cardiac output and ventilation change the speed of induction and emergence
- ✓ Use MAC values to compare potency and add agents together
- ✓ Match each agent to its hallmark side effect and choose safely around N2O and MH

THE LESSON ON ONE PAGE

Speed (blood:gas)

- ◆ Des 0.42, N2O 0.47, sevo 0.65, iso 1.4
- ◆ Ventilation up = faster
- ◆ Cardiac output up = slower
- ◆ Soluble agents feel both most

Potency (MAC)

- ◆ Iso 1.15, sevo 2, des 6, N2O 104%
- ◆ MACs add; 1.3 MAC = 95%
- ◆ Age: minus 6% per decade after 40
- ◆ Potency follows oil:gas

Hallmarks

- ◆ Sevo: compound A, mask induction
- ◆ Des: pungent, sympathetic surge, CO
- ◆ Iso: coronary steal (theoretical)
- ◆ Halothane: hepatitis

Nitrous oxide

- ◆ Expands closed gas spaces
- ◆ Diffusion hypoxia: give 100% O2
- ◆ B12 and methionine synthase
- ◆ Second gas effect; not an MH trigger

KEY TABLES

Solubility

Agent	Blood:gas	Speed
Desflurane	0.42	Fastest volatile
Nitrous oxide	0.47	Fast
Sevoflurane	0.65	Fast
Isoflurane	1.4	Slower
Halothane	2.4	Slowest (historic)

BOARD TRAPS

"Higher cardiac output speeds inhalation induction."

False. More blood flow carries more agent away from the alveoli, so FA/FI rises **slower**. It speeds **IV** induction, which is where the confusion comes from. Low output (shock) speeds the volatile rise and risks overdose.

"Low blood:gas solubility means high potency."

False. Blood:gas predicts **speed**. Potency follows **oil:gas**. Desflurane is the fastest volatile and also the least potent (MAC 6%).

"A right-to-left shunt slows isoflurane the most."

False. The shunt slows **insoluble** agents more (desflurane, sevoflurane, N2O). Soluble agents partly make up the difference through extra uptake in ventilated lung.

"At 5,000 feet, leave the desflurane dial where it is."

False. The desflurane vaporizer delivers a fixed **percent**. Lower ambient pressure means a lower partial pressure, so you must turn it **up**. Variable-bypass vaporizers self-correct.

MEMORY DEVICES

Blood:gas order, fastest first

Des Naps Soon, Iso Hangs

- D** Desflurane 0.42
- N** Nitrous oxide 0.47
- S** Sevoflurane 0.65
- I** Isoflurane 1.4
- H** Halothane 2.4