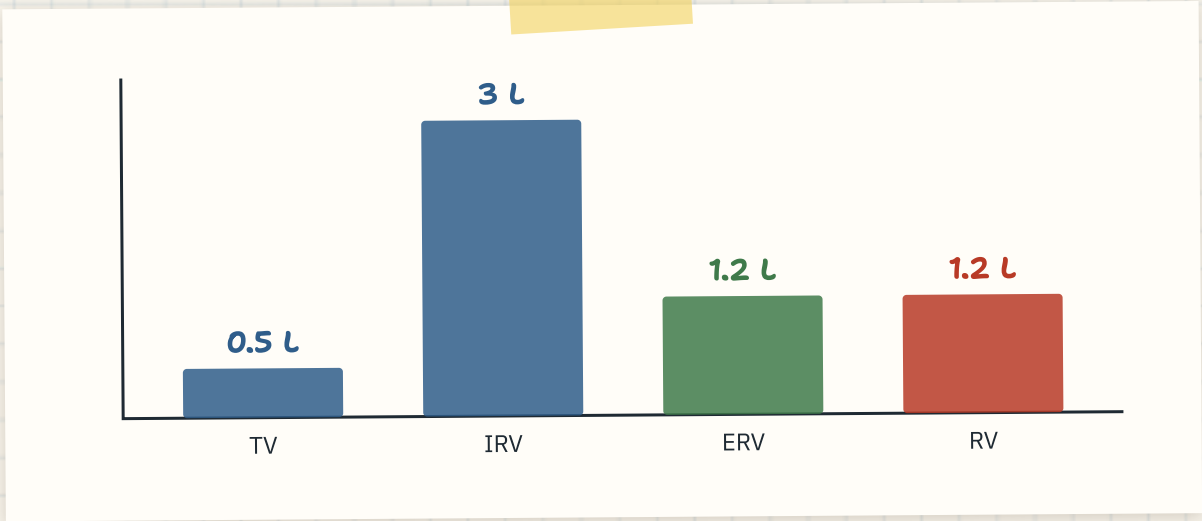
Lung volumes and capacities

What a spirometer can and cannot see



Step by step

1. Read TV, IRV, ERV on the spirogram
2. Add them: VC
3. Measure FRC by helium, washout or plethysmography
4. RV = FRC − ERV
5. TLC = VC + RV

Capacity	Made of
IC	TV + IRV
VC	TV + IRV + ERV
FRC	ERV + RV
TLC	VC + RV

Capacities as sums

TOTAL LUNG CAPACITY

TLC = VC + RV

RV = FRC − ERV; FRC = ERV + RV

Rule of thumb

Contains RV = invisible to spirometry

RV, FRC, TLC all need a second method

Exam traps

- Spirometry cannot measure RV, FRC or TLC.
- FRC is not the total lung capacity.
- Do not add FRC to VC: that counts ERV twice.

Lung volumes and capacities, explained

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/respiratory-physiology/lung-volumes-capacities-spirometry

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