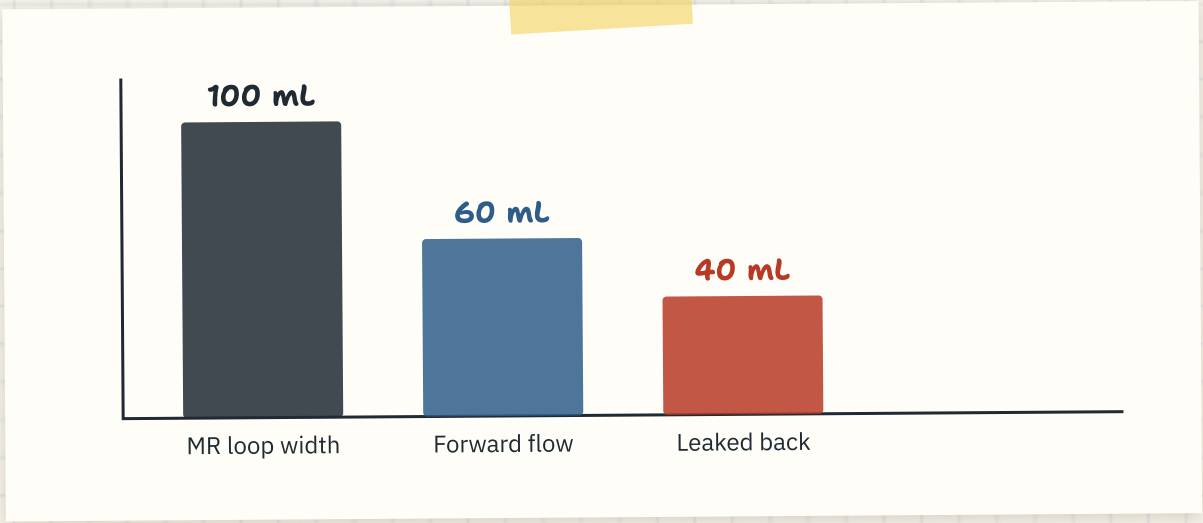
# Valve disease on the PV loop

Aortic stenosis vs mitral regurgitation




## Step by step

1. Aortic stenosis = pressure overload: afterload up, loop tall and narrow, ESV up
2. Mitral regurgitation = volume overload: afterload down, preload up, loop wide and shifted right
3. MR has no true isovolumetric contraction or relaxation; left atrial pressure rises in systole
4. Read: height first, then width, then vertical sides

| Loop | EDV | ESV | Stroke volume |
|---|---|---|---|
| Normal | 120 mL | 50 mL | 70 mL |
| Aortic stenosis | ≈ 110 mL | ≈ 60 mL | ≈ 50 mL |
| Mitral regurgitation | ≈ 150 mL | ≈ 50 mL | 100 mL wide; 60 mL forward |

Teaching model (chronic, compensated)

### Read the loop

**Height first.**
**Then width.**
**Then the vertical sides.**

## Exam traps

- The wide MR loop overstates forward flow: part of it leaks back into the left atrium.
- AS EDV: Klabunde says it usually falls a little; LITFL says preload rises. Know the convention you are using.
- Compare loop width with forward flow, and peak LV pressure with aortic pressure.

Aortic stenosis vs mitral regurgitation on the pressure-volume loop

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/cardiovascular/aortic-stenosis-vs-mitral-regurgitation-pv-loop

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