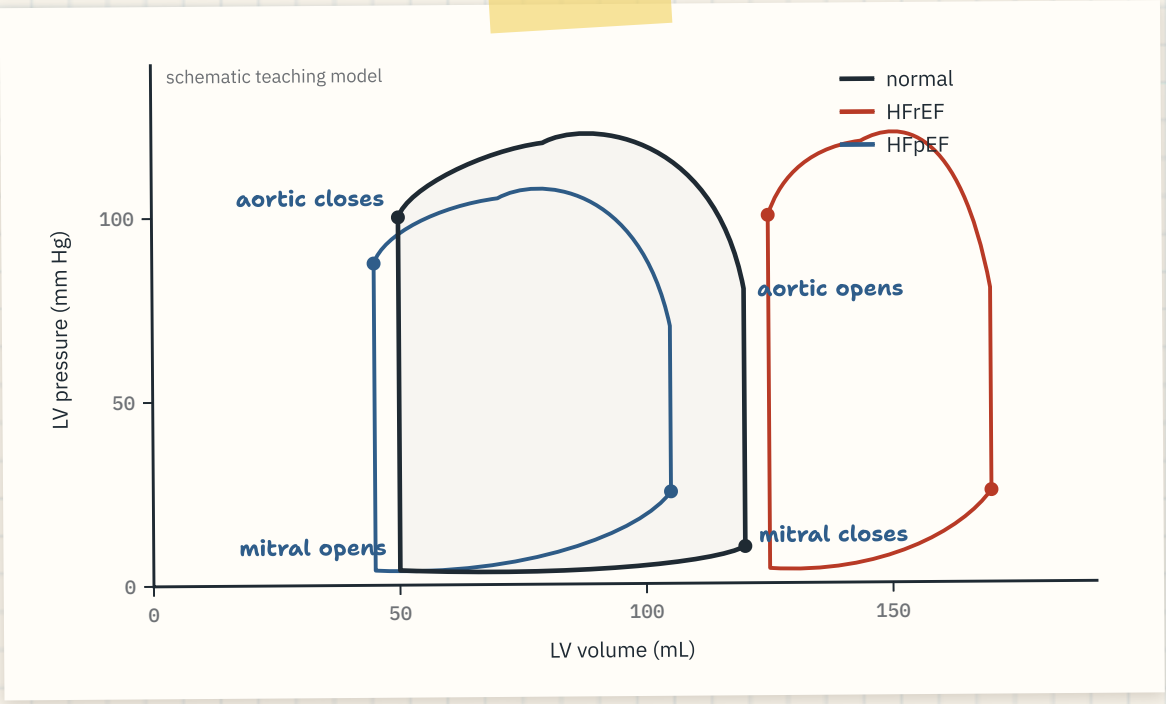
HFrEF vs HFpEF on the PV loop

Which curve moved: ESPVR or EDPVR?



Step by step

1. HFrEF: flatter ESPVR, loop shifts right, EF 40% or less
2. HFpEF: steeper EDPVR (up and left), normal or low EDV, EF 50% or more
3. Mildly reduced: EF 41–49%
4. Both raise end-diastolic pressure and can congest the lungs

	EDV	SV	EF
Normal	120 mL	70 mL	≈ 58%
HFrEF	≈ 170 mL	45 mL	≈ 26%
HFpEF	105 mL	≈ 60 mL	≈ 57%

Teaching model (illustrative)

EJECTION FRACTION

$$EF = SV / EDV$$

HFpEF: SV and EDV shrink together, so EF looks normal.

Which curve moved?

ESPVR flatter = emptying problem (HFrEF).

EDPVR steeper = filling problem (HFpEF).

Exam traps

- EF 62% can still be heart failure: HFpEF is a filling problem.
- In HFpEF the ESPVR is not the main problem.
- Both types raise end-diastolic pressure.

HFrEF vs HFpEF on the pressure-volume loop

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/cardiovascular/hfref-vs-hfpef-pressure-volume-loop

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