PADN for IpcPH: Pilot Results

Shao-Liang Chen, MD
Nanjing First Hospital
Nanjing Medical University
Nanjing, China

Disclosure

- I have nothing to disclose

Heart failure is a complex clinical syndrome

Impairment of ventricular filling

±

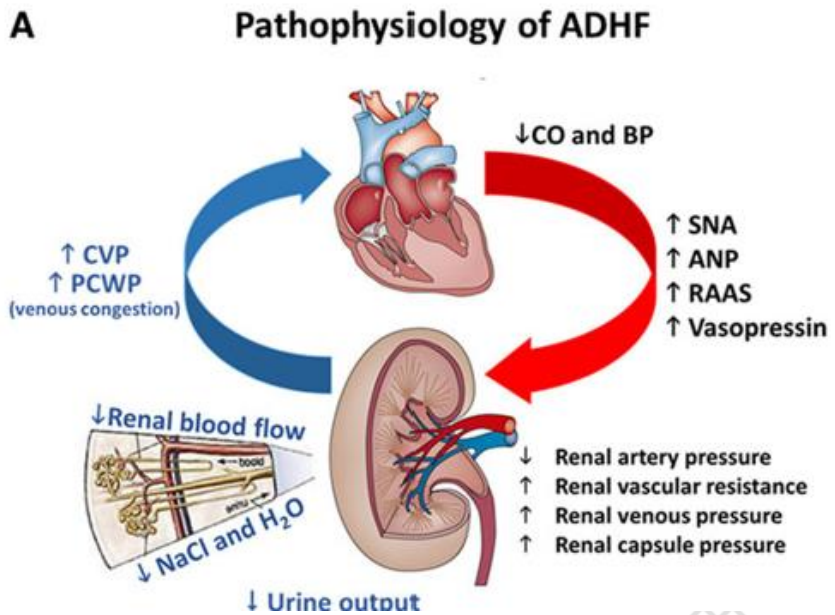
Reduction of LV ejection fraction

Acute HF (ADHF):

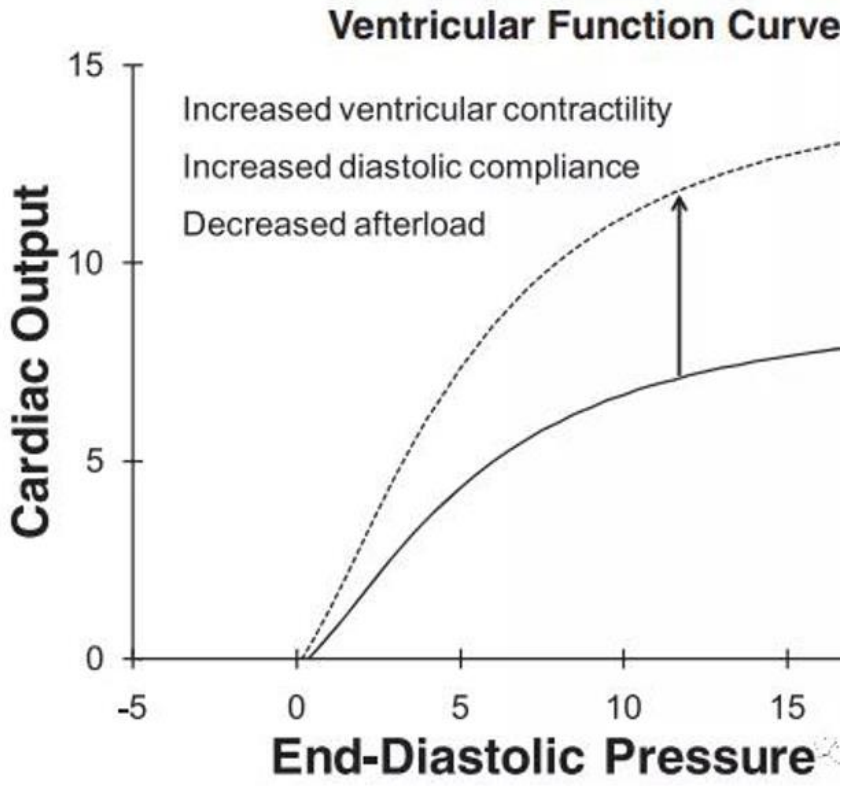
- Re-hospitalization: 31.9%/per year
  --Usually <60-90 days since discharge
- Mortality-34.1%/per year

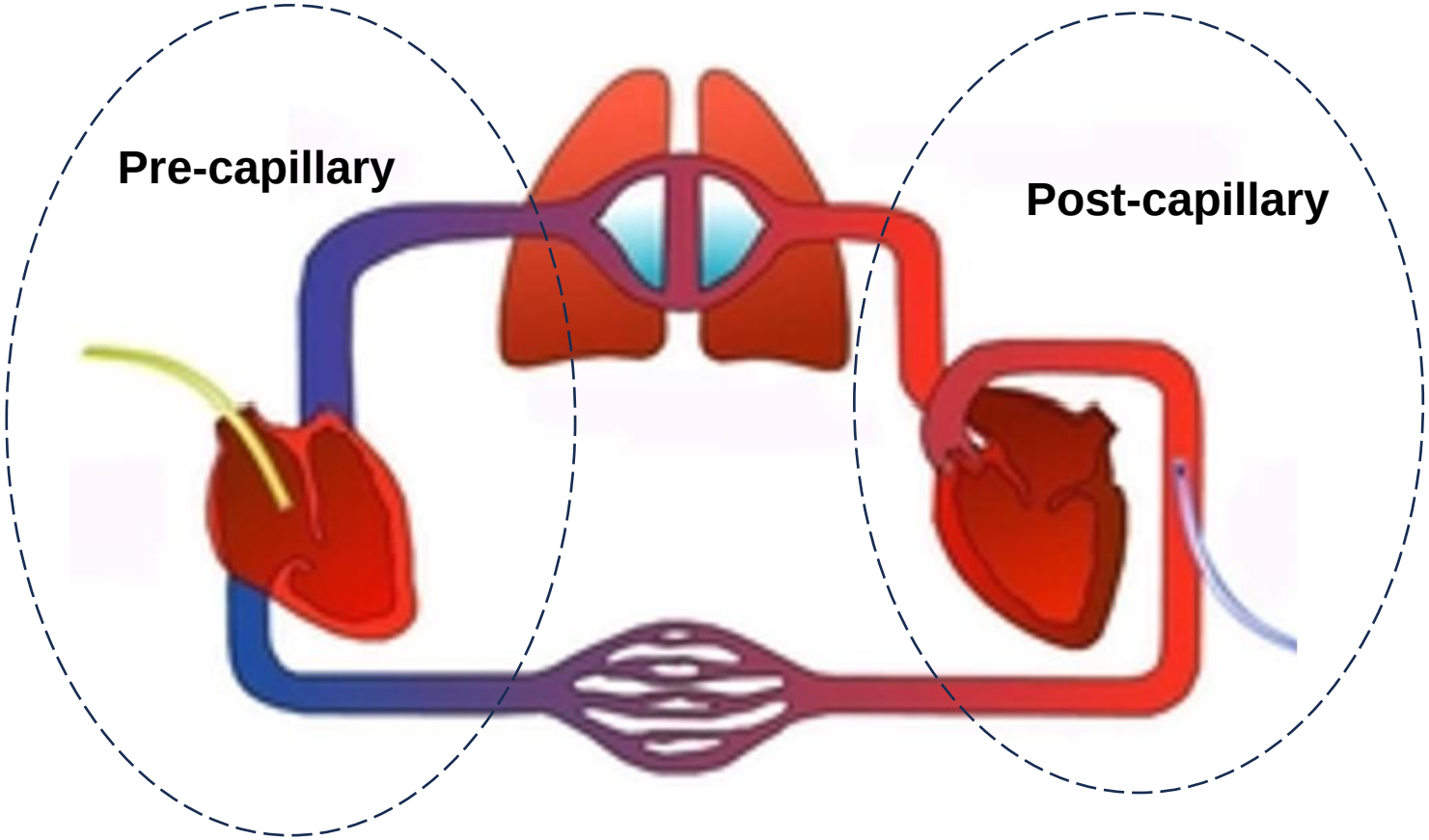
Chronic HF	LVEF
HFrEF	<40%
HFmrEF (mid-range)	41-49%
HFpEF	≥ 50%

8 million in US
23 million globally
GDMT
Device-based



- ✓ PVR < 5 WU: indication for repair
- ✓ PVR 5-8 WU: grey zone
- ✓ PVR > 8 WU: contraindication

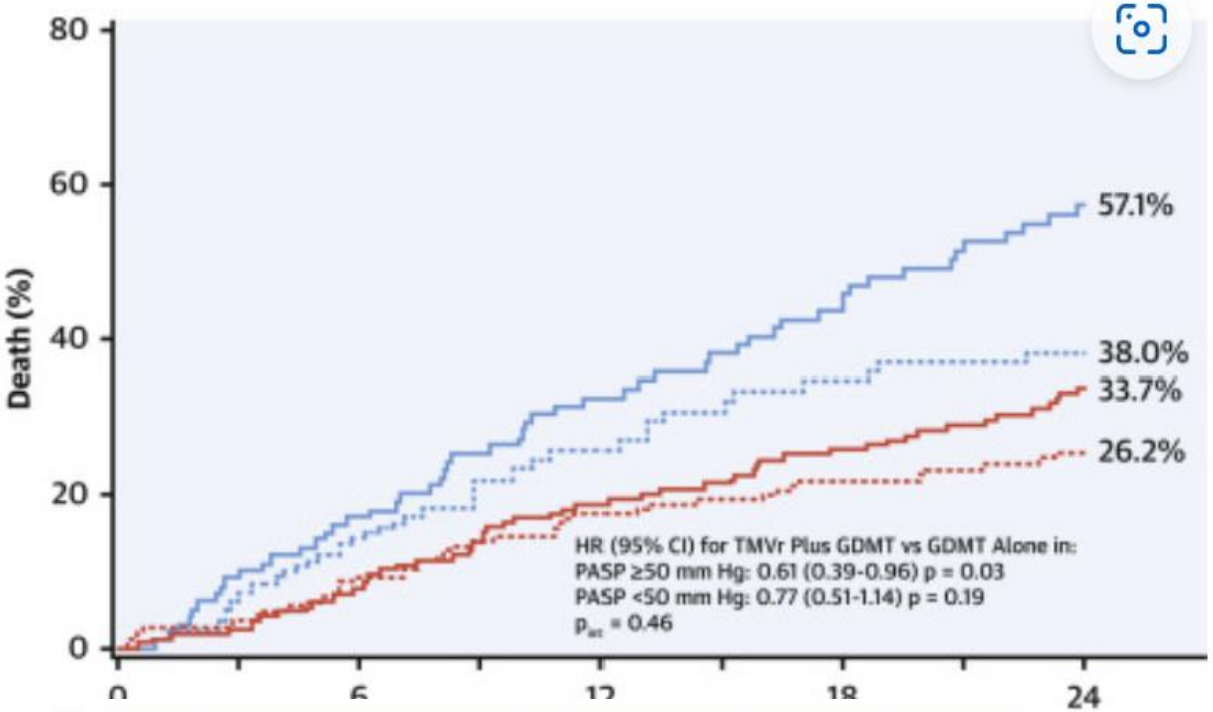


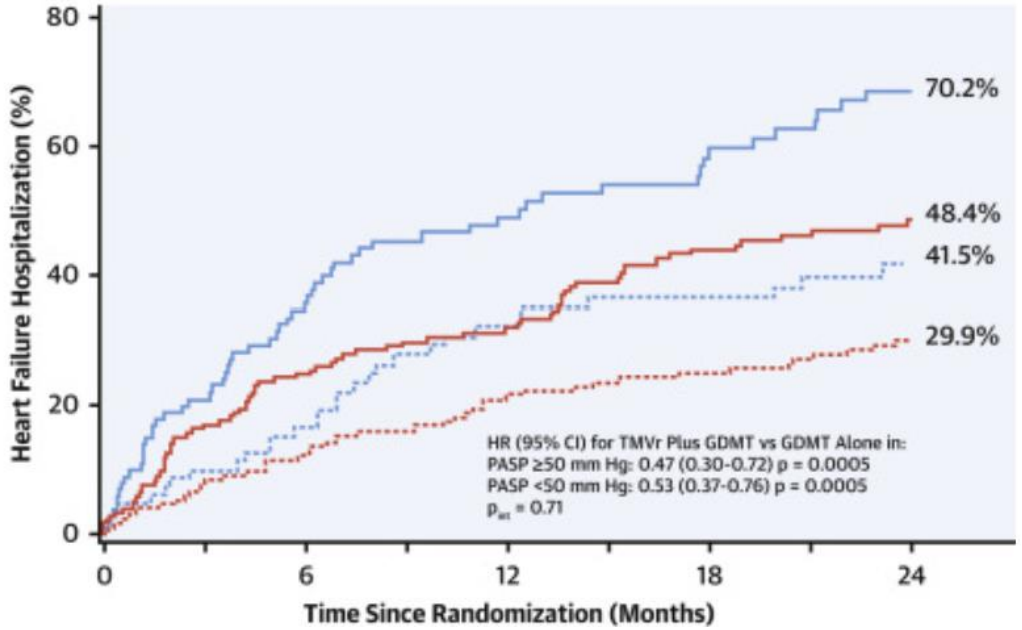


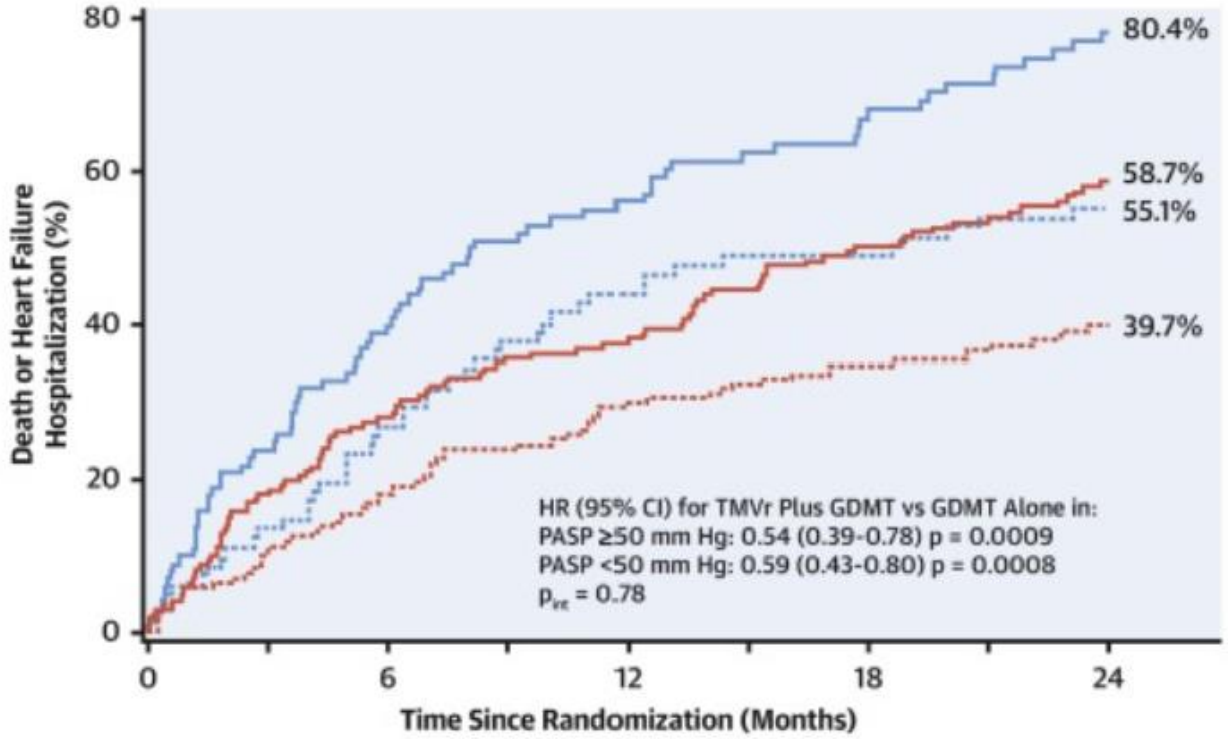
All treatments for valvular, congenital, ischemic, and heart failure focus on improving circulation-- minimizing the likelihood of **pulmonary hypertension**

Classification and definition of HF-PH

	2022 ESC/ERS	Previous criteria
HFrEF	LVEF ≤ 40%	LVEF ≤ 40%
HFpEF	LVEF > 40%	LVEF > 40%
IpcPH	mPAP > 20 mmHg, PAWP > 15 mmHg, PVR < 2 Wood Units	mPAP ≥ 25 mmHg PAWP > 15 mmHg PVR < 3 Wood Units
CpcPH	mPAP > 20 mmHg, PAWP >15 mmHg, PVR > 2 Wood Units	mPAP ≥ 25 mmHg PAWP > 15 mmHg PVR > 3 Wood Units

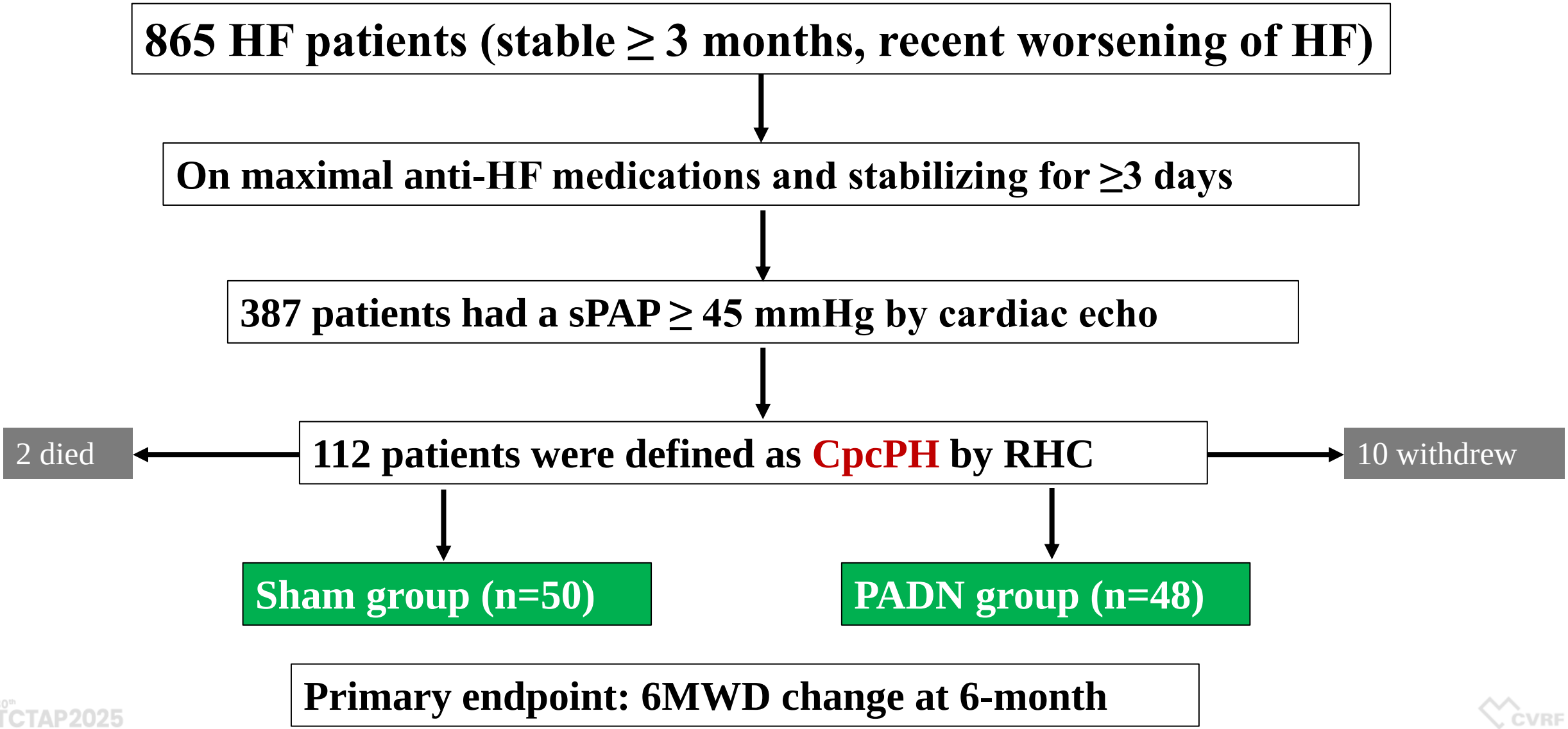






Ben-Yehuda O, et al. Pulmonary Hypertension in Transcatheter Mitral Valve Repair for Secondary Mitral Regurgitation: The **COAPT Trial**. J Am Coll Cardiol. 2020;76(22):2595-2606.

PADN-5 trial

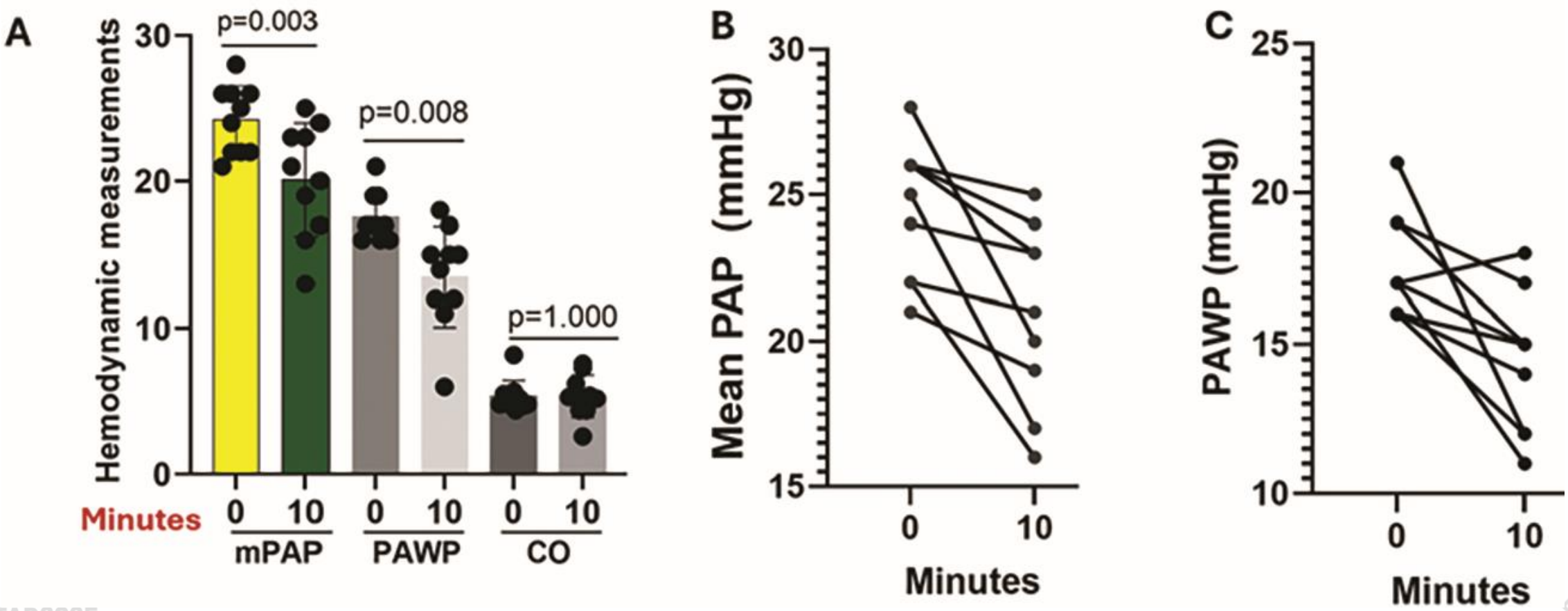

865 HF patients (stable ≥ 3 months, recent worsening of HF)
On maximal anti-HF medications and stabilizing for ≥3 days
387 patients had a sPAP ≥ 45 mmHg by cardiac echo
112 patients were defined as CpcPH by RHC
2 died
10 withdrew
Sham group (n=50)
PADN group (n=48)
Primary endpoint: 6MWD change at 6-month

Key question:

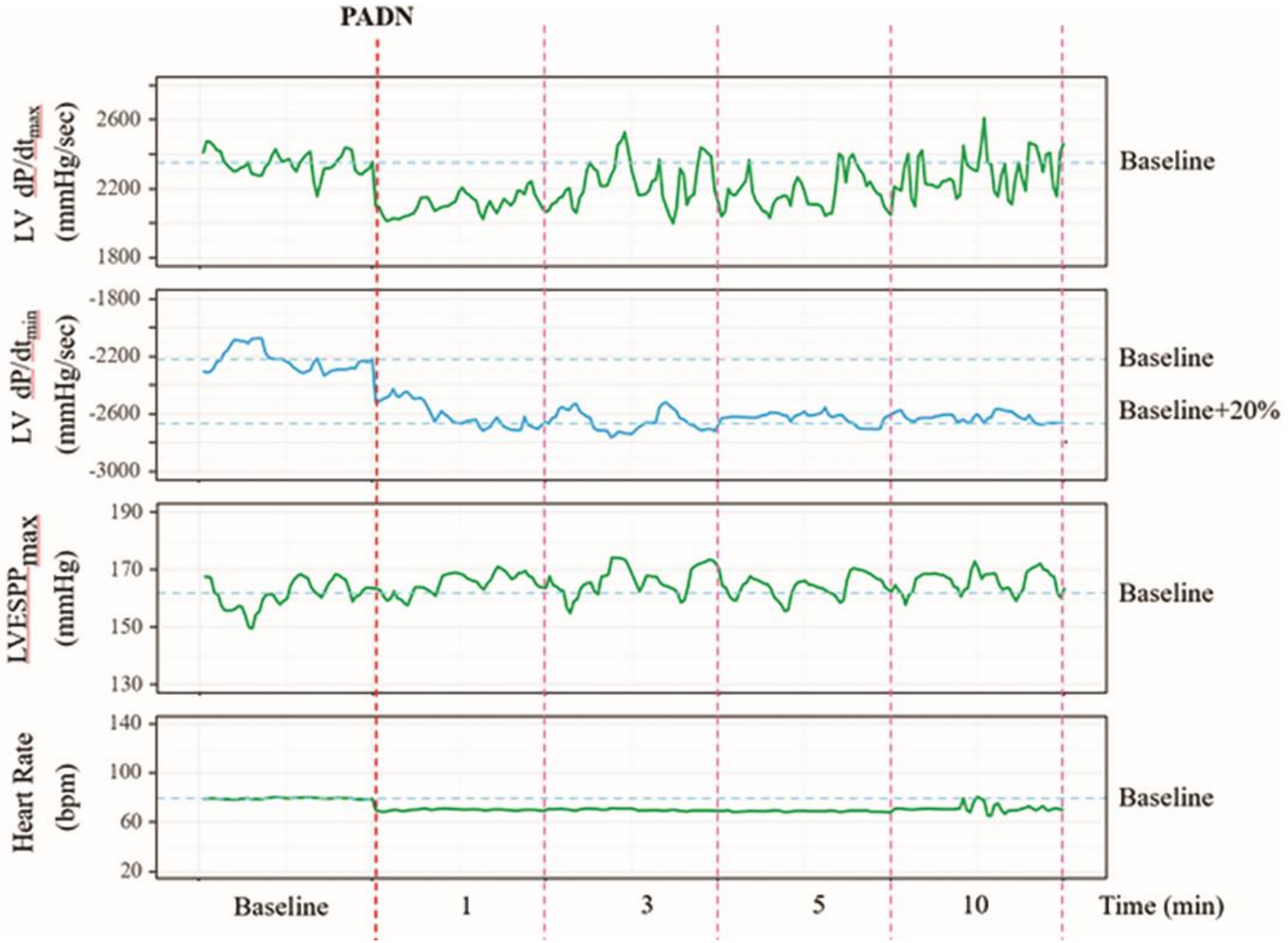
Is PADN a beneficiary for **IpcPH** patients?

PADN for HFpEF (LVEF>40%) with IpcPH, n=10

Proof and Concept of Trial: N=20, HFrEF=10, HFpEF=10



Dynamic change of dp/dt until to 10 min after PADN

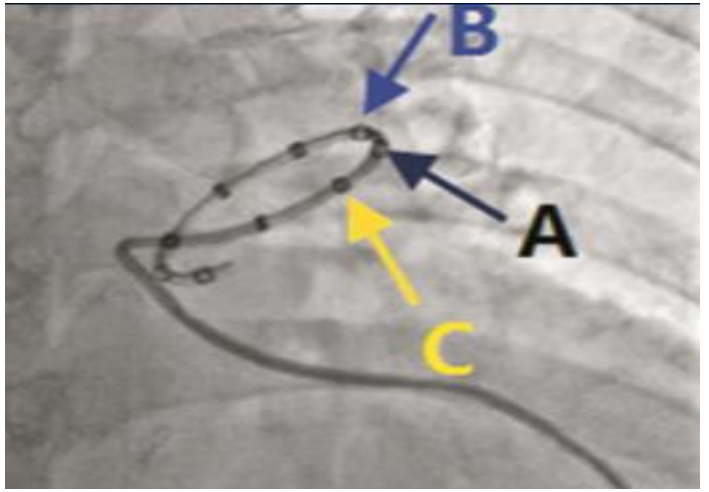


Central Illustration. Dynamic change of dp/dt ratio during 10-minute monitoring

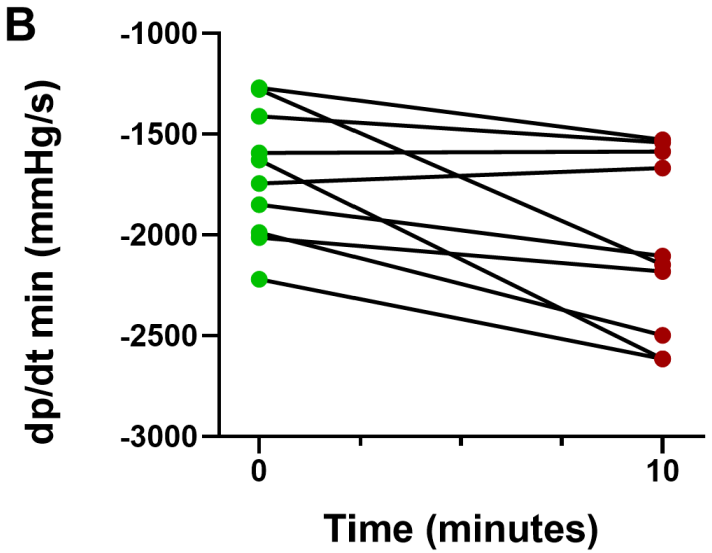
Heart failure, LVEF>40%

IpcPH (mPAP>20mmHg, PAWP>15 mmHg, PVR≤2 Woods Unit)

PADN procedure



Timing (min)	LV dp/dt $_{mini}$ (mmHg/s)	% of reduction	p value
Baseline	-1699± 323	Reference	Reference
1 minutes	-1880±456	-10.7%	0.015
3 minutes	-1919±543	-12.9%	0.025
5 minutes	-1882±480	-10.8%	0.020
10 minutes	-2048±442	-20.5%	0.012



Future trials for PADN in PH-LHD

PADN-5 trial
(CpcPH, n=100)

→

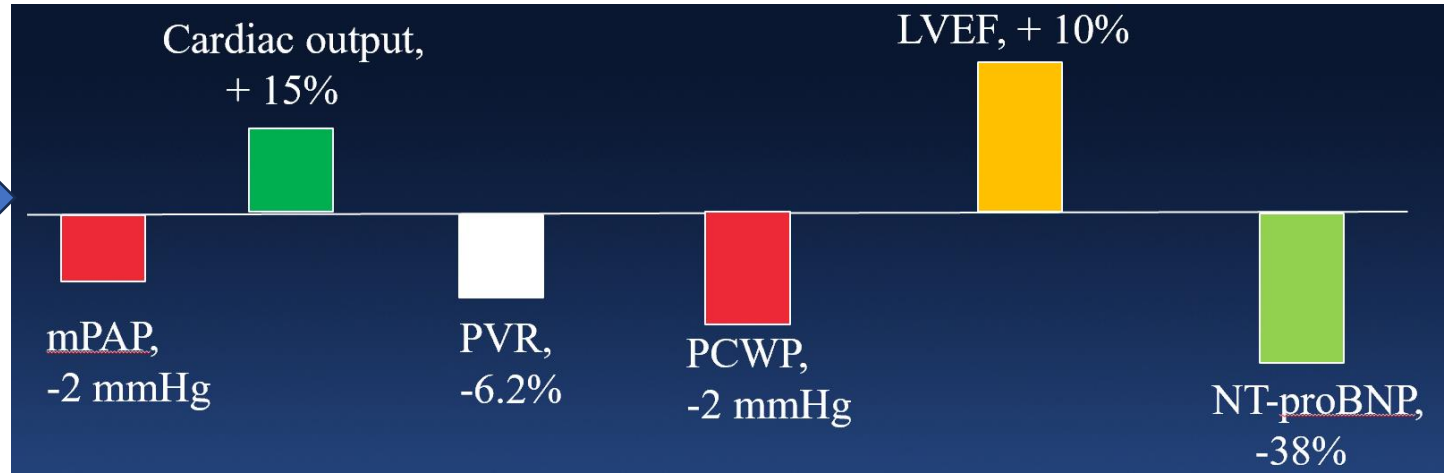
PLANNER trial
(IpcPH + CpcPH, n=264)

→

COLUMBUS trial
(only CpcPH, n=30)

Pilot trial
(only IpcPH, n=20)

→



PADN for IpcPH (N=20, 6-m follow-up)

Future trial 1
(Entire HF patients)

- mPAP > 25 mmHg, PCWP>15 mmHg, PVR < 3.0 WU
- Results showed improvements in cardiac function and hemodynamic

In Conclusion

PADN is associated with significant reductions in PAP and PAWP, likely driven by improved left ventricular relaxation, as reflected by dp/dt_{min}, in patients with HFpEF-induced IpcPH. (***ClinicalTrials. Gov: NCT06323512***).

Thanks for your kind attention!