

# ***How should we really manage functional mitral regurgitation?***

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Disclosure:

Consultant, Abbott Vascular



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# Hemodynamics in Heart Failure Therapy: *They're baack!*



# Hemodynamically Focused Oral Heart Failure Therapy

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## ***Then...***

- Hydralazine/Isordil – improved survival vs digoxin/diuretics in advanced HF
  - V-Heft I (1986)
- ACE-I - improved outcomes compared to vasodilator therapy
  - Consensus (1987), V-HeFT II (1991), Hy-C (1992)

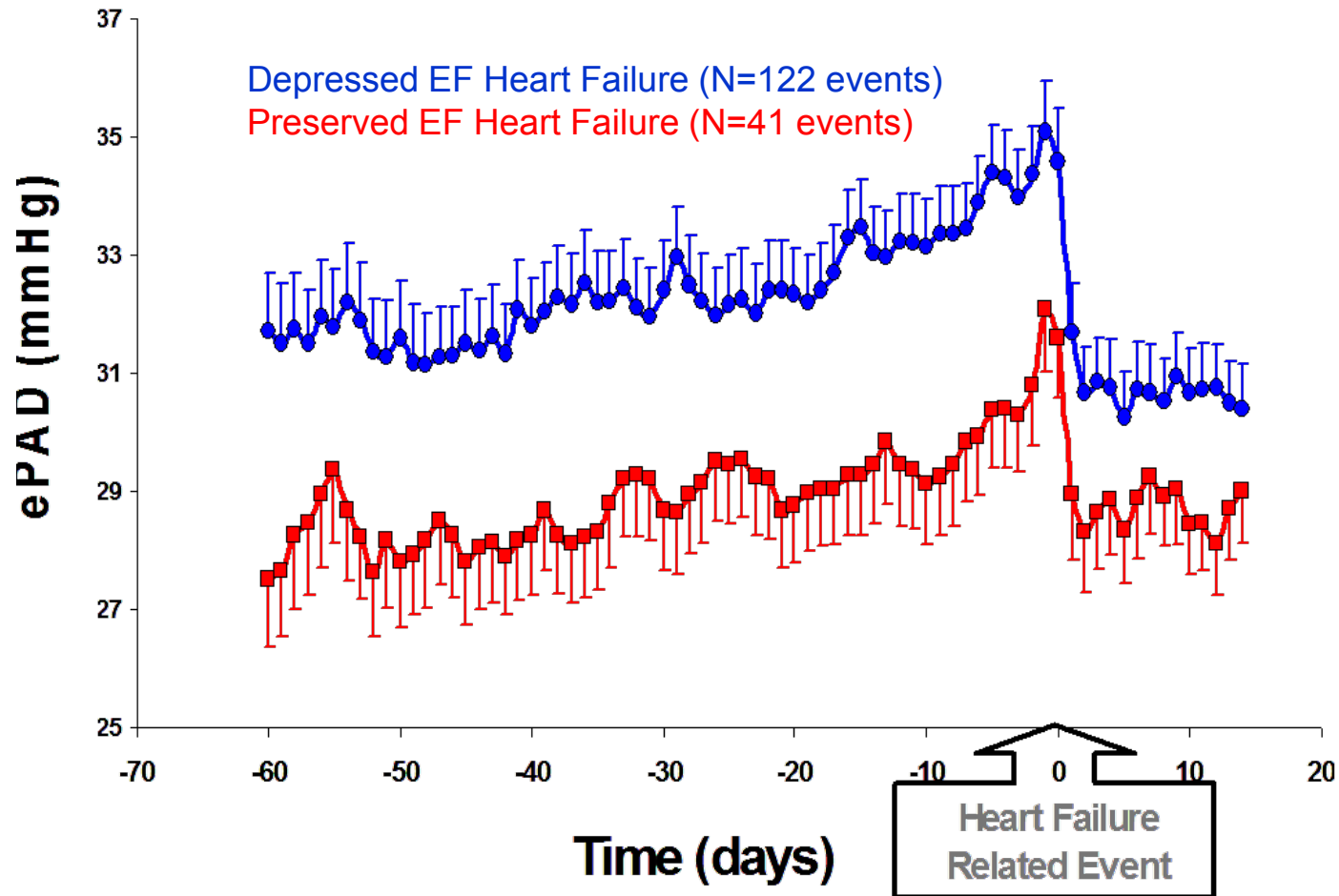
## ***But...***

- Addition of hydralazine/isordil to ACE-I/betablockade - improves survival (in AAs)
  - A-HeFt (2004)

## ***Now...***

- Sacubitril/Valsartan – improved survival c/w ACE-I
  - PARADIGM-HF (2014)

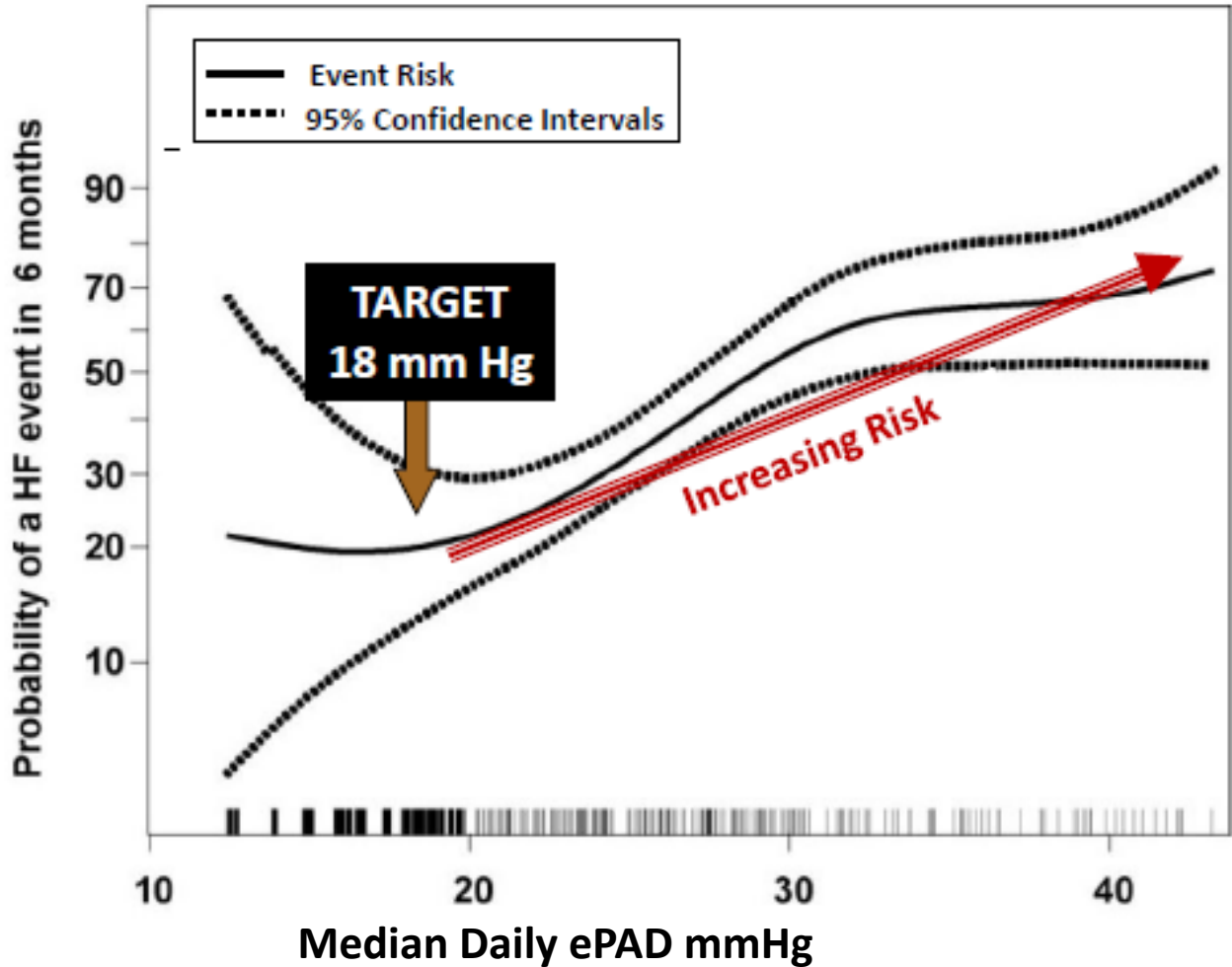
# Intracardiac Pressures Rise Early Preceding HF Events



Zile MR, et al. *Circulation*, 2008.

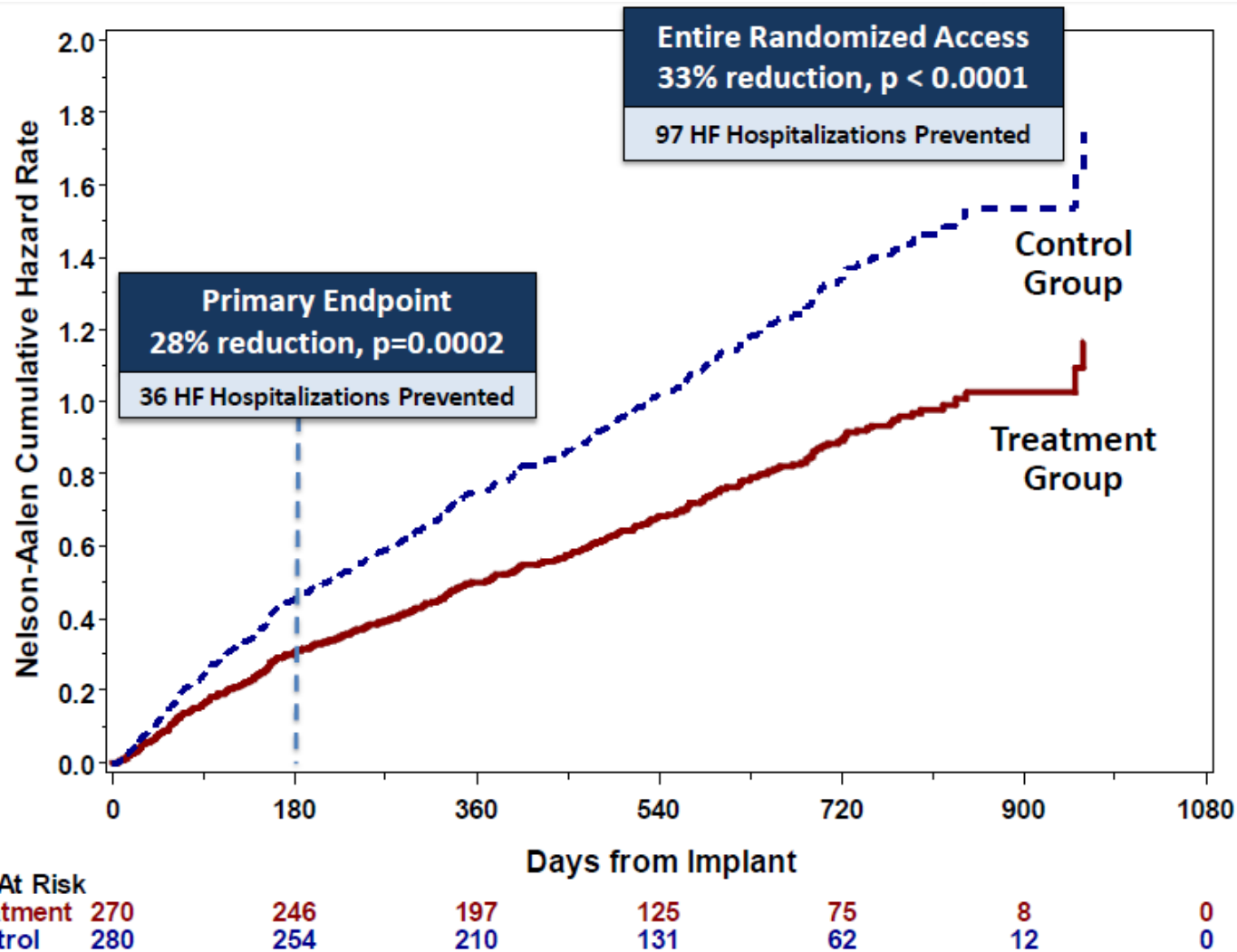
# Probability of HF Event Relative to ePAD

Excluding pressures 7 days before or after event



Stevenson LW, et al. *Circ Heart Fail.* 2010 Sep;3(5):580-7. Epub 2010 Jun 18.

# CHAMPION TRIAL: PA pressure monitoring to reduce heart failure admissions



Abraham WT, et al, Lancet 2011



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*What does this have to do with  
functional MR?*



# FUNCTIONAL MITRAL REGURGITATION

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Present in 30-50% of patients with HFrEF

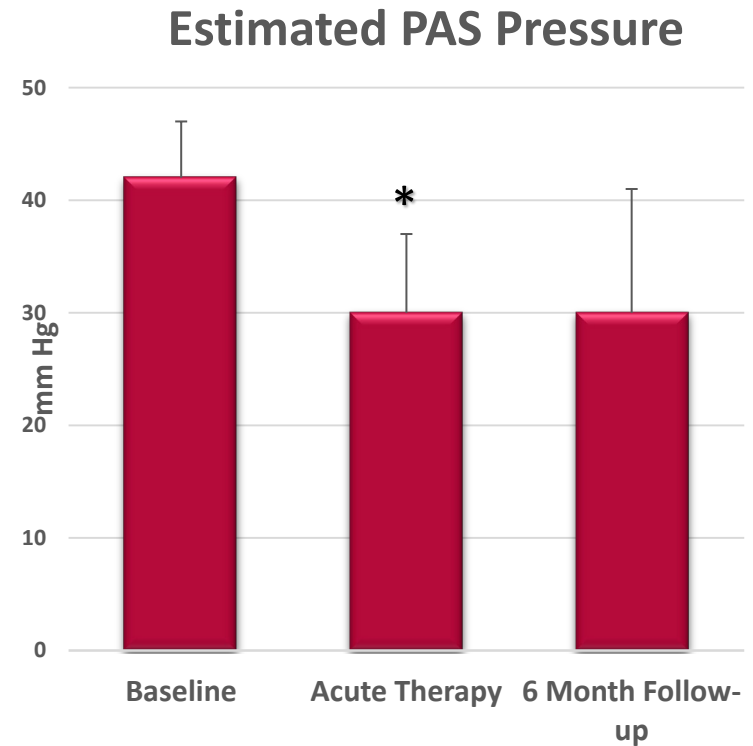
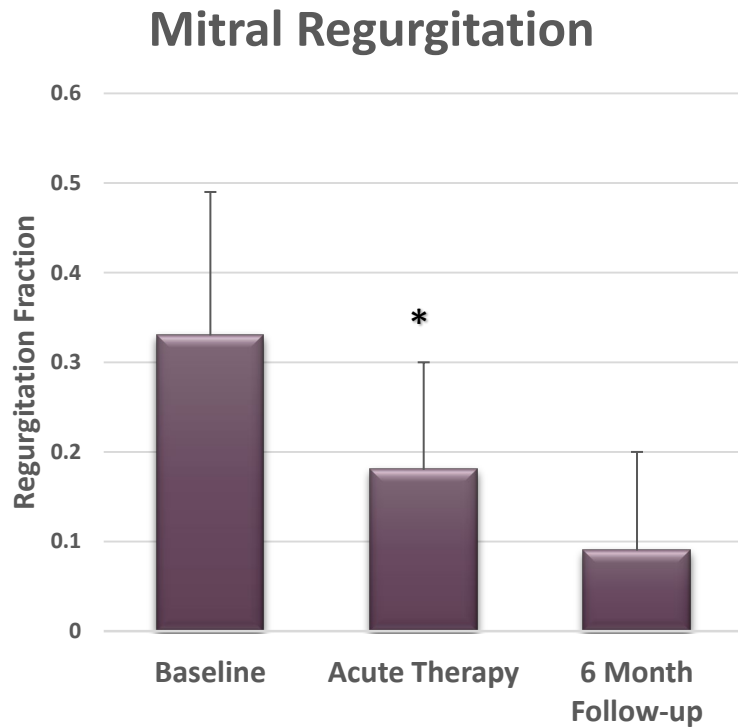
Initially caused by LV dysfunction, but then becomes a contributor to further deterioration in LV function

Causes pulmonary hypertension and RV dysfunction

Can lead to the development of atrial arrhythmias



# Sustained Reduction in MR with Hemodynamically Targeted Therapy



Hamilton MA, et al *Am J Cardiol* 1991

# CRT and Functional Mitral Regurgitation

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- Which is the primary response:
  - Reduction in wall stress and LV size reduces effective MV annular size and thus MR?
  - Reduction in MR leads to reduction in further volume load on the LV?
- MR can be immediately reduced with CRT and recur when CRT stopped, even after favorable remodeling has occurred

# Mitral Valve Repair and Replacement

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- Surgical outcomes for patients with LVEF <35% have not been favorable
- Transcatheter MV repair (Mitraclip) safely improves forward flow without change in contractility...and reduces HF hospitalizations and mortality
- Transcatheter MV replacement devices under investigation

# What about Mechanical Circulatory Devices?

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The natural extension of other heart failure therapies -- think hemodynamics:

Preload and afterload reduction lead to *less*:

**Mitral regurgitation**

Wall stress

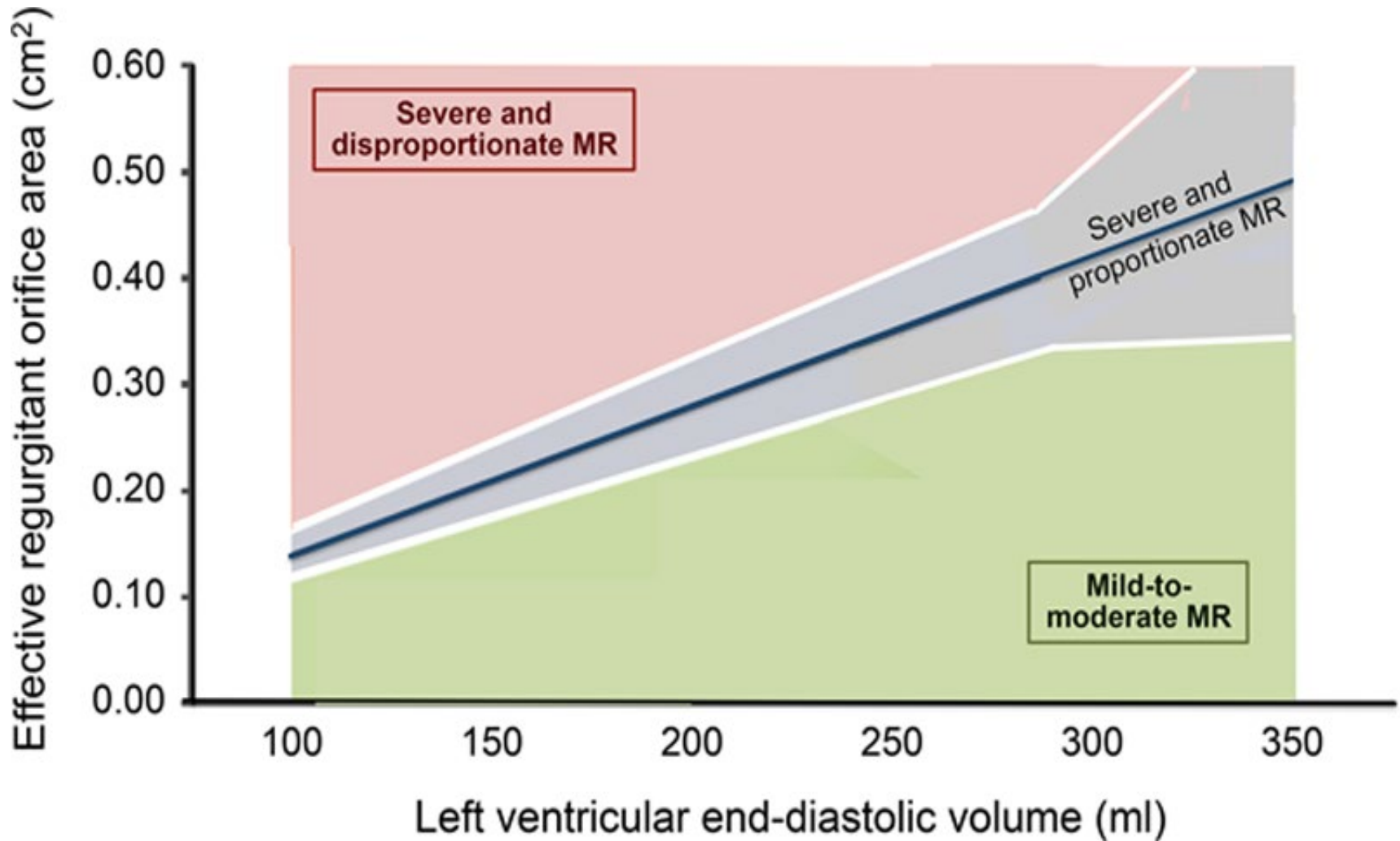
Pulmonary congestion and hypertension

Greater forward flow leads to *more*:

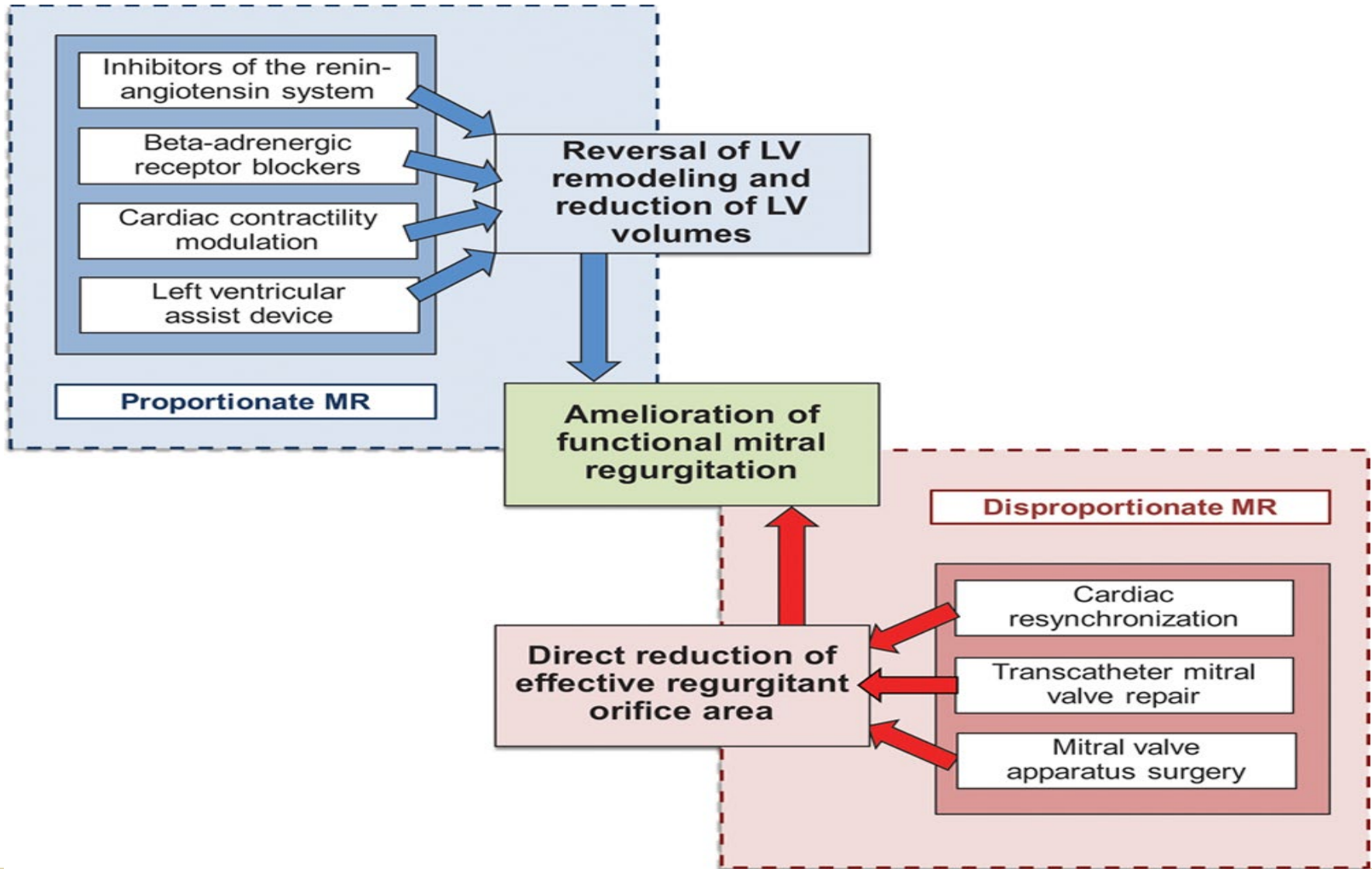
Renal perfusion

Functional reserve

# Proportionate vs disproportionate Functional MR



# APPROACH TO MITRAL REGURGITATION IN PATIENTS WITH FUNCTIONAL MITRAL REGURGITATION



# Summary

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Functional mitral regurgitation is an important contributor to worsening of hemodynamics, symptoms, and outcomes in patients with HFrEF

It is important for the heart failure specialist to assess each patient's degree of MR and target MR reduction with one or more of these options:

- Medical therapy that includes targeting preload and afterload reduction
- Resynchronization therapy
- Transcatheter MV repair (or replacement?)
- Mechanical assist devices when needed

