How to manage AF and heart failure

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DECLARATION OF INTEREST

- Research contracts

Classification of AF in heart failure

- AF caused by heart failure
- AF causing heart failure

Predictors of HF→AF

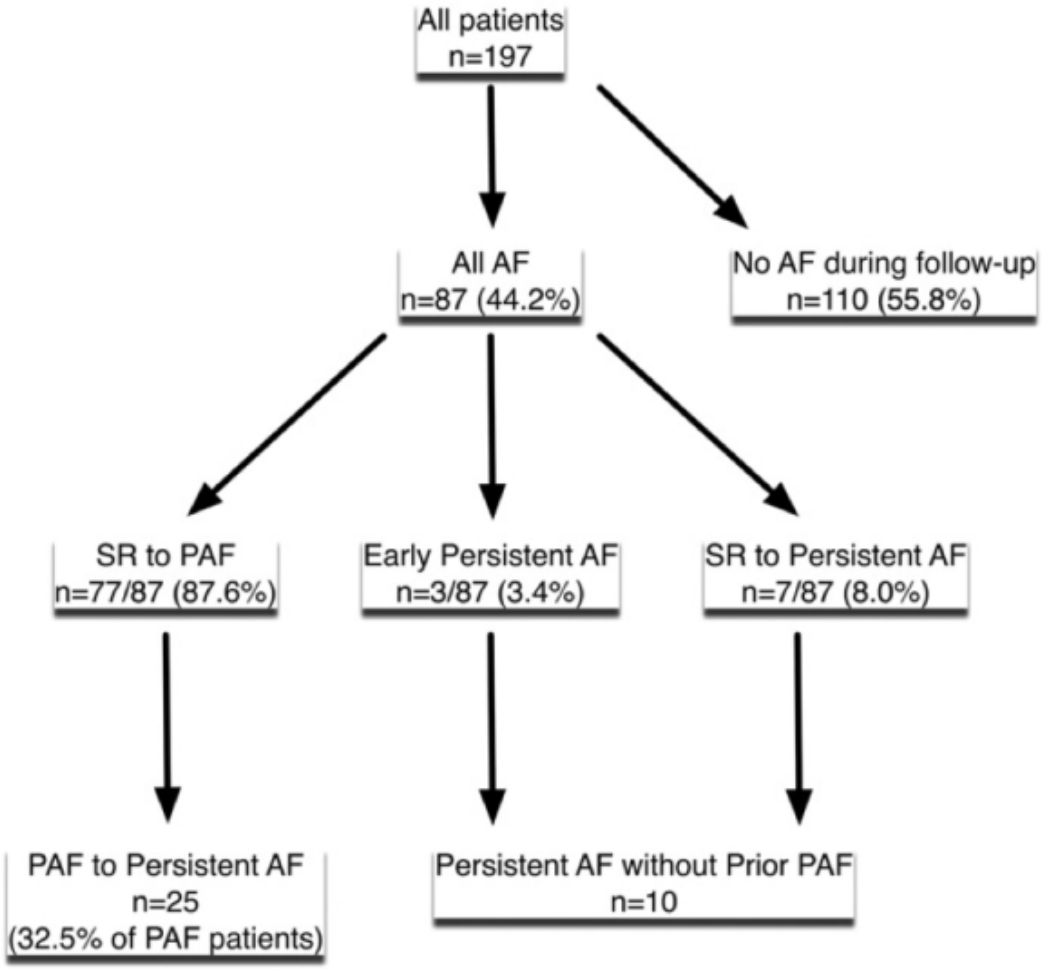
- Similar to non HF patients

Campbell et al. Int J Cardiol 2014

Natural history of HF→AF

- 197 pts
- no history of AF
- EF 20-30%
- Implanted devices capable of AF detection
- 2 year follow up

AF doesn't necessarily progress
Even in heart failure



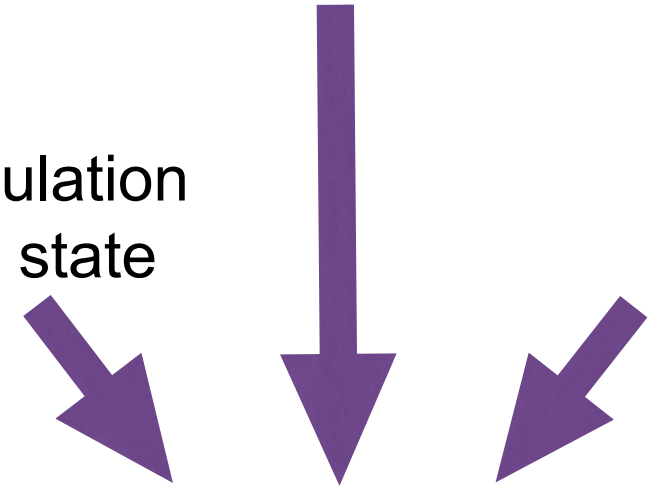
Campbell et al. Int J Cardiol 2014

Heart failure caused by AF

Rate related
Ischaemia
Ca handling

Inflammatory
Neuroendocrine
Sympathetic stimulation
Pro-inflammatory state

Mechanical
↓LVED filling
Beat to beat variation



Abnormal ventricular function

Predictors of AF→HF

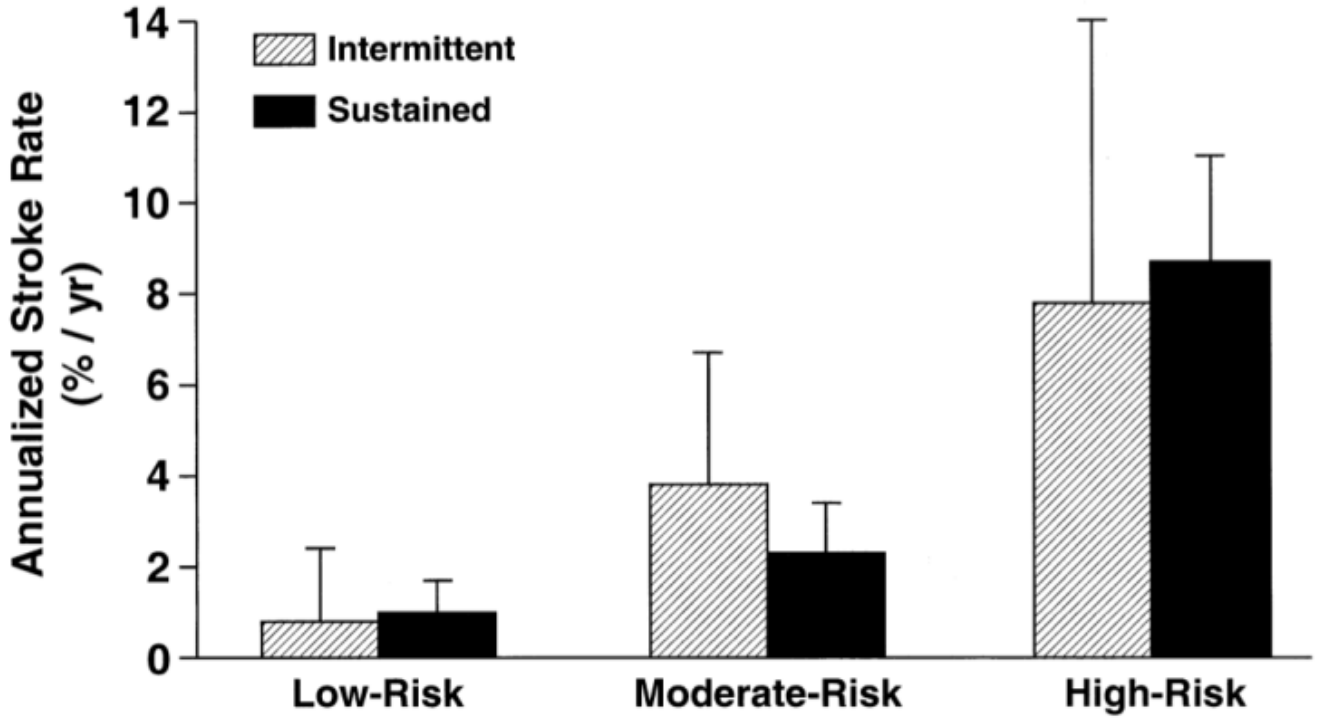
- Less common than HF → AF
- Poor rate control >110 bpm
- AF can cause HF even when rate control is adequate

Management of AF and heart failure

- Step 1 Stroke prevention and HF optimisation
- Step 2 decide - rate control or rhythm control
- Step 3 applying rate or rhythm control

Stroke prevention

- Symptoms or type of AF do not predict risk



Hart et al JACC 2000

Stroke prevention in HF

- Bleeding risk - Identify reversible risk factors
  - Hypertension
  - Alcohol
  - Drugs (aspirin)
- Renal dysfunction

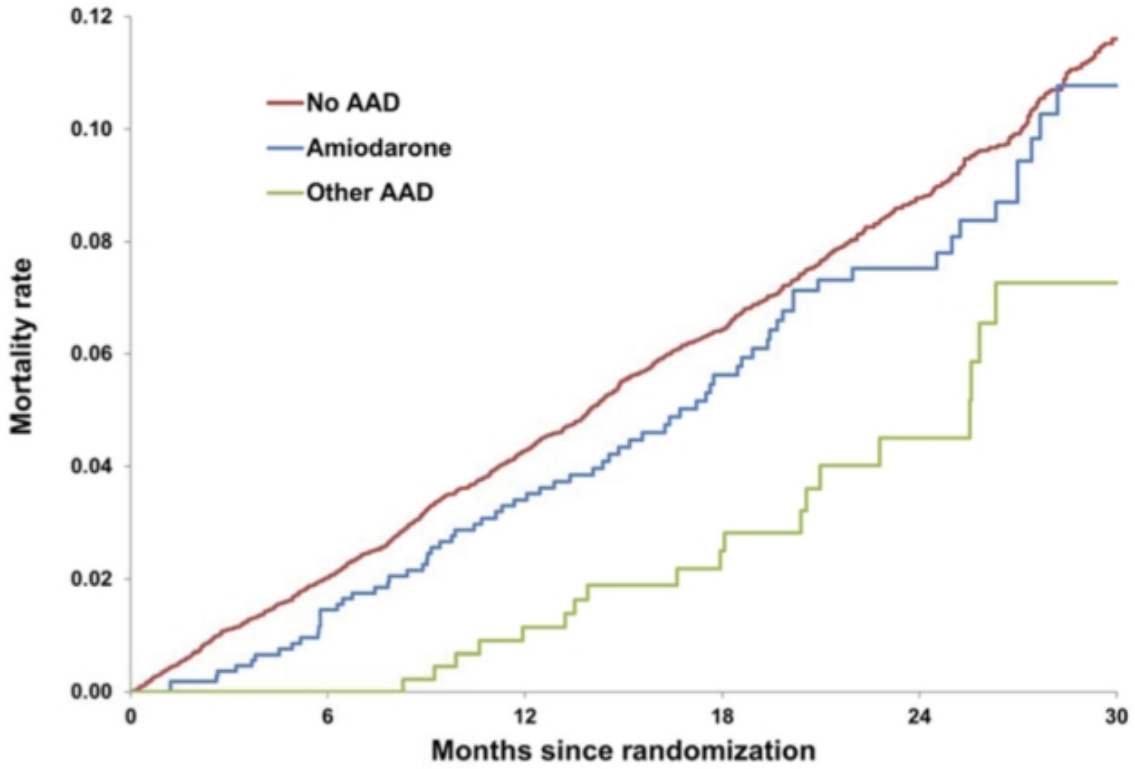
Step 2 rate vs rhythm control

- Rhythm control - no ↑prognosis/stroke risk in any RCT:
  - Rhythm control didn't work (drugs/cardioversion)
  - Anti arrhythmic drugs > risk than AF

Van Gelder et al NEJM 2002
AFFIRM investigators NEJM 2002

Step 2 rate vs rhythm control

- Analysis from Rocket AF
- HF in 71% vs 41% vs 62%



No AAD	12503	11865	11247	8201	4974	2132
Amiodarone	1132	991	904	624	359	118
Other AAD	536	464	422	305	169	69

Steinberg et al Heart Rhythm 2015

Step 2 rate vs rhythm control

- Two key questions
  - Is AF making symptoms worse?
  - Is AF causing heart failure?

Is AF making symptoms worse?

- In PAF - do symptoms correlate with ECG?
- In persistent AF what is the response to DC cardioversion on amiodarone?

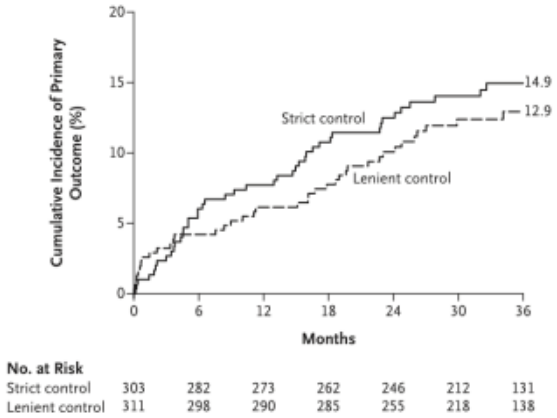
DC cardioversion on amiodarone

- Low risk
- Amiodarone may help maintain SR
- Patient can assess symptomatic benefit of SR
- Patient then choses
  - Rate control
  - Rhythm control
    - Maintain amiodarone or catheter ablation

Step 2 rate vs rhythm control

- Do symptoms get worse with AF? - no
- Is the HF caused by AF? - no

Rate control to <110 bpm



Rate control in HF

- **Beta-blocker** or Ca^{2+}-blocker
- Additional digoxin
- Personal preference - Ca^{2+}-blocker > digoxin
- CRT pacing +/- AV node ablation

Step 2 rate vs rhythm control

- Do symptoms get worse with AF? - not sure
- Is the HF caused by AF? - no

Rate control

Then if fails

PAF correlate symptoms with ECG

DC cardioversion on amiodarone

Step 2 rate vs rhythm control

- Do symptoms get worse with AF? - yes
- Is the HF caused by AF? - no

Rate control to 80 bpm (symptoms not prognosis)

If fails then

Rhythm control

Step 2 rate vs rhythm control

- Is the AF causing symptoms? - no or yes
- Is the HF caused by AF? - yes

Catheter ablation

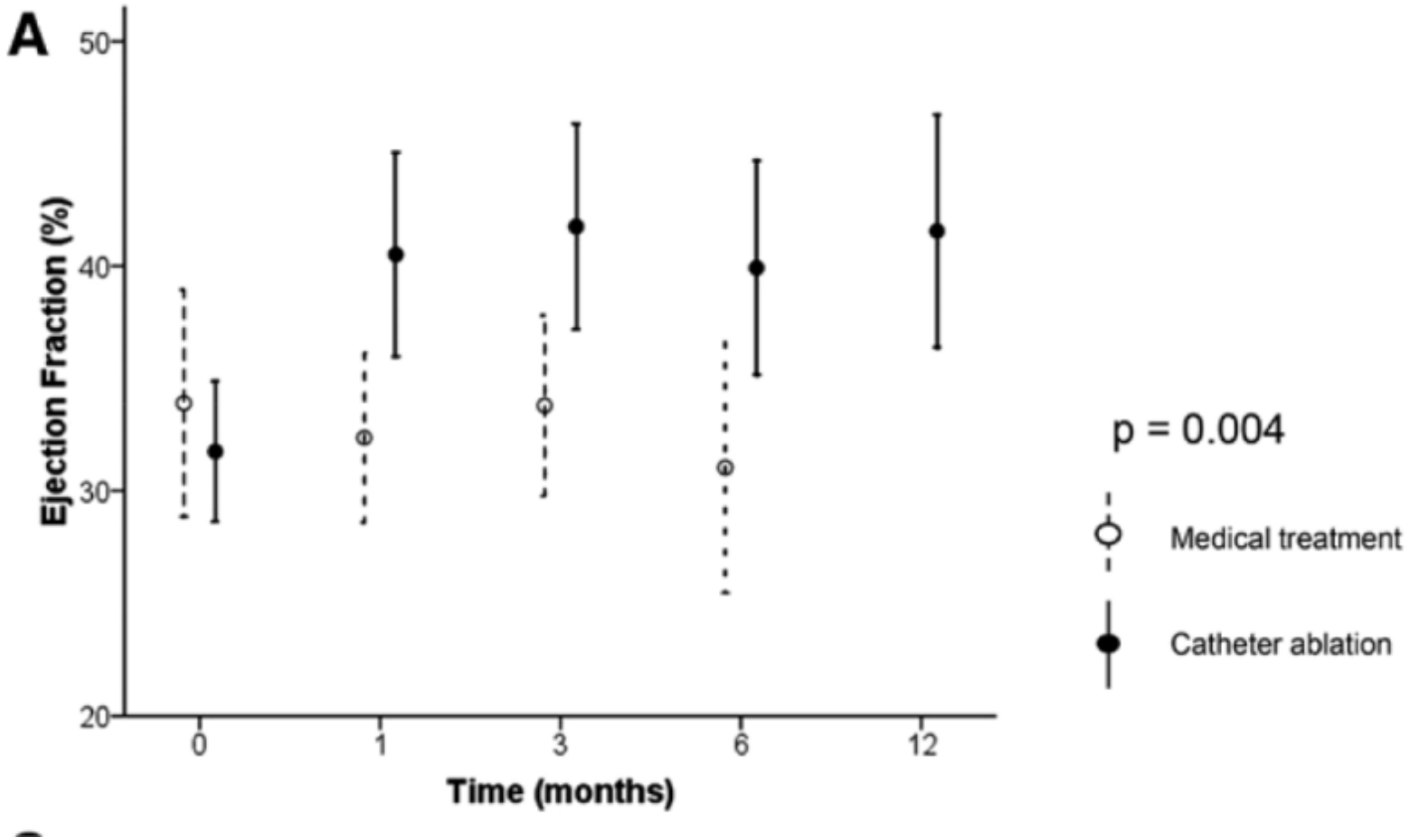
AF ablation in HF

N=50 pts
RCT of persistent AF puts and EF<50%
Optimal medical therapy for 1 month then randomised to continued rate control or ablation

	ablation (26)	control (24)
EF	31.8±7.7	33.7±12.1
co-diagnosis of AF	15	13
months of AF	24	24

Hunter et al. Circ EP 2014

AF ablation and HF with systolic dysfunction - outcome



Hunter et al. Circ EP 2014

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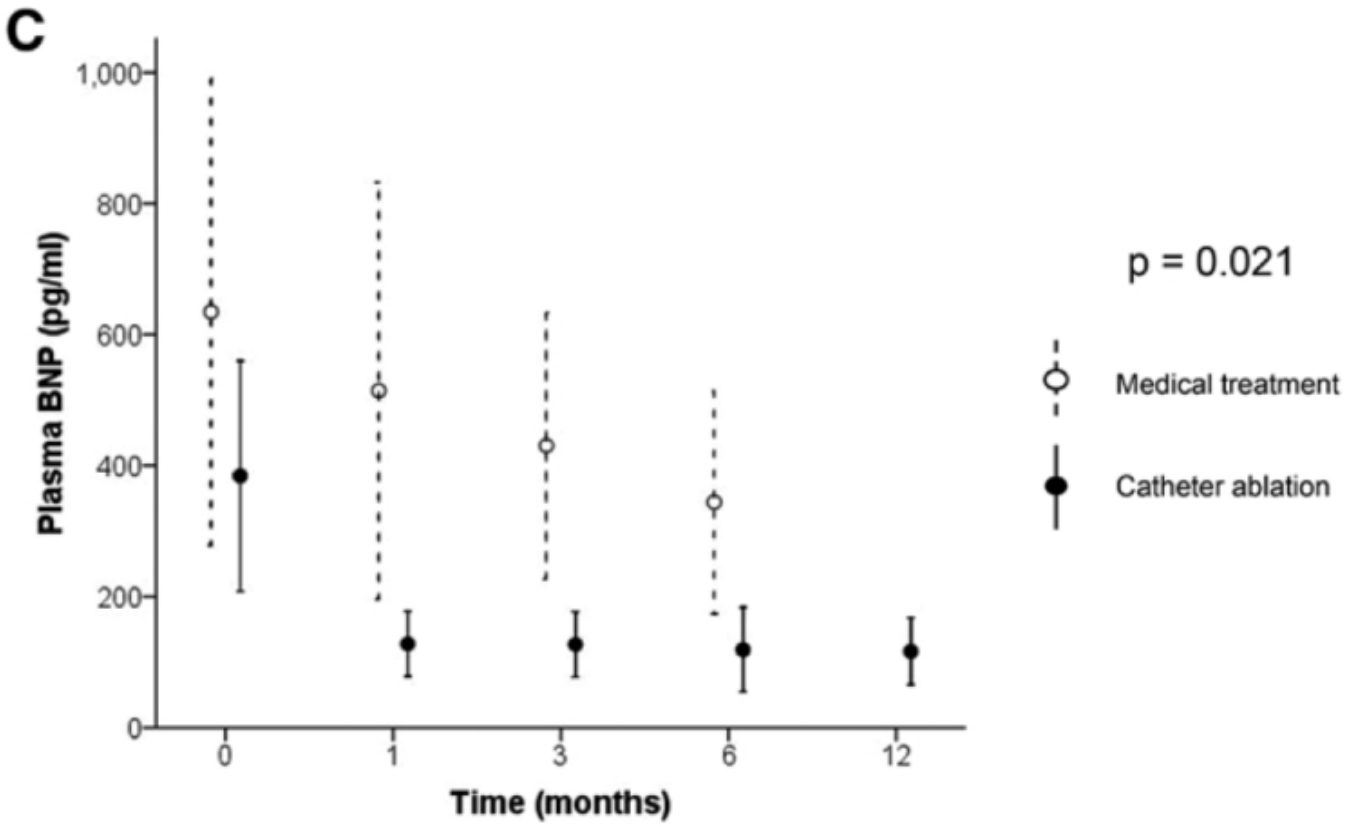
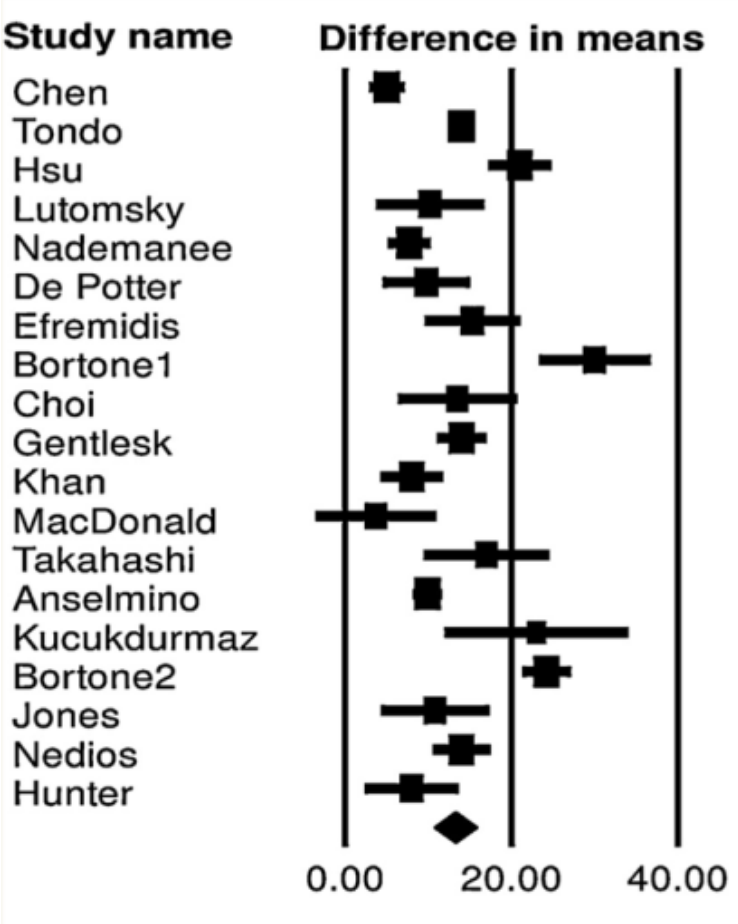


Hunter et al. Circ EP 2014

Meta-analysis of AF ablation in HF

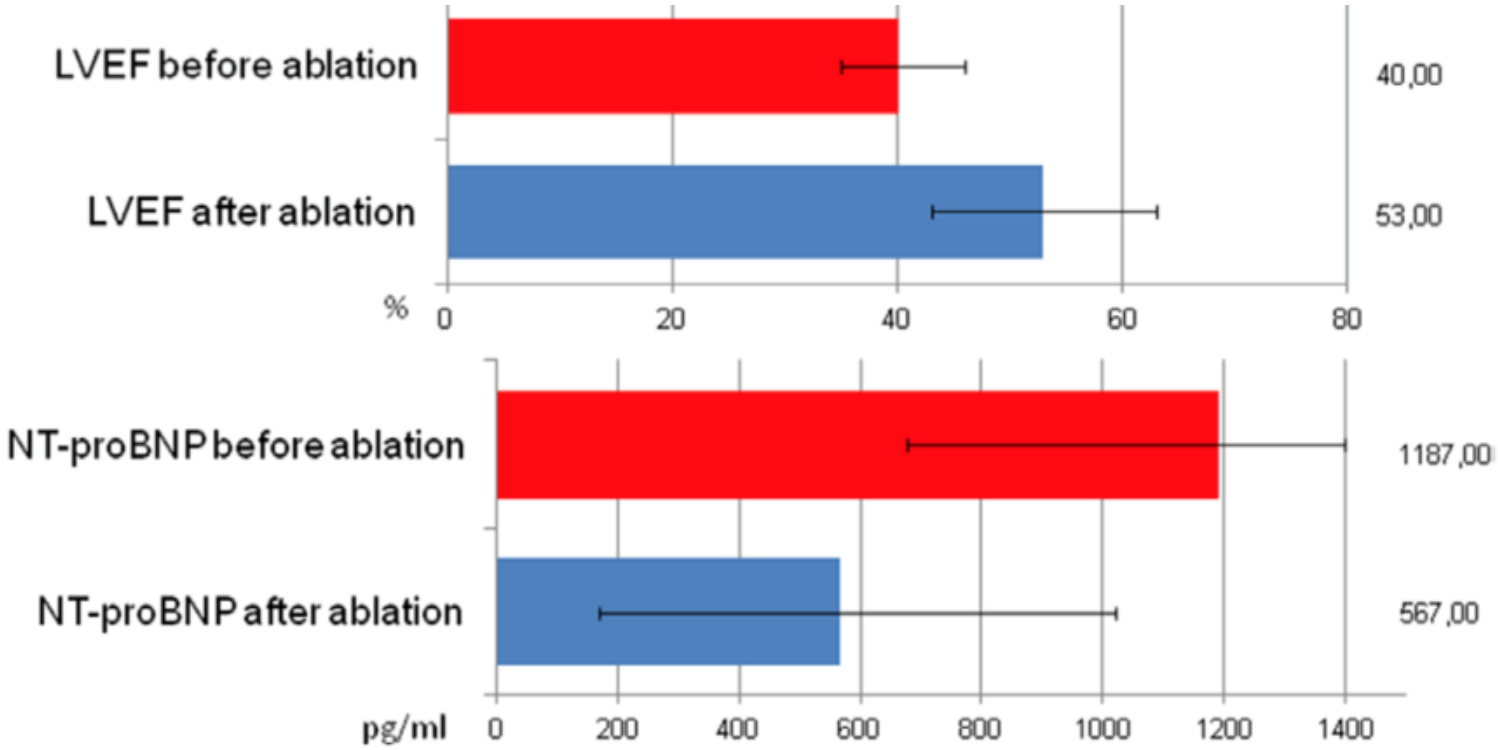
- ↑ in EF with ablation
- Mean 13.5%

(95% CI 11-16%)



Ganesan et al. Heart and Lung Circ 2015

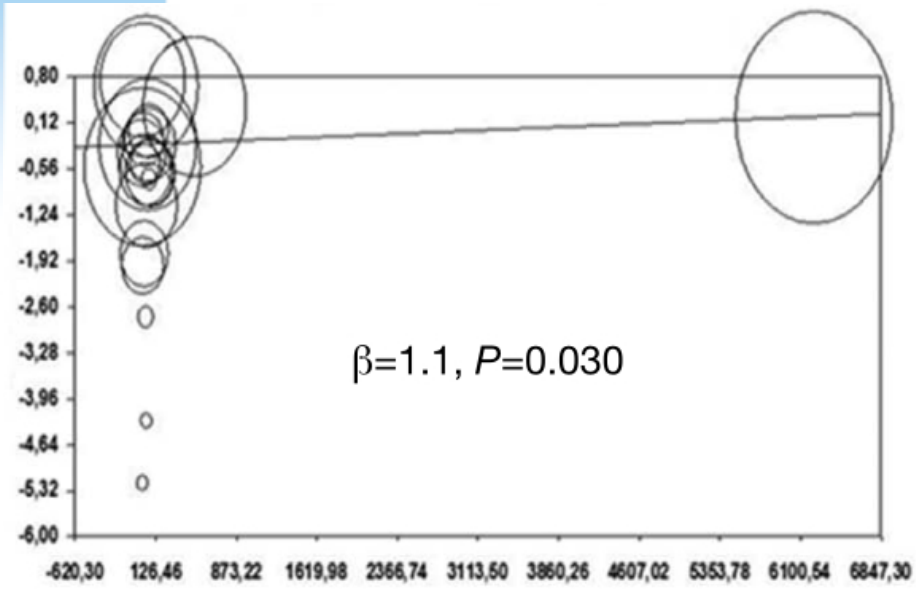
Meta-analysis of AF and HF



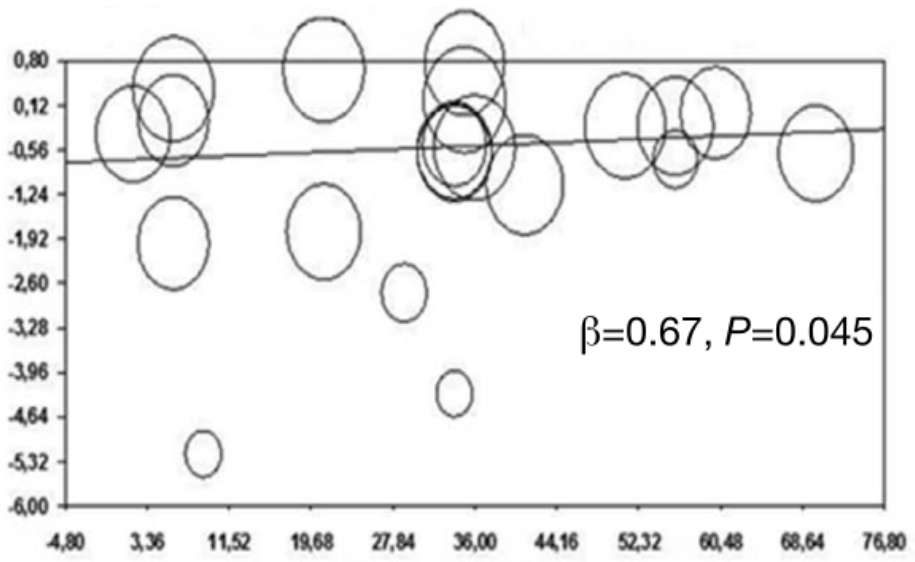
Anselemino et al. Circ AE 2014

Ablation success ↑ in pts with short history of AF/HF

- Meta-analysis, n=1838



Time in AF and recurrence risk



Time in HF and recurrence risk

Anselemino et al. Circ AE 2014

Identifying AF causing HF

	ablation (26)	control (24)
Patients with normalisation EF	5 (25%)	0
co-diagnosis of AF	5 (100%)	n/a

If they had symptoms from AF then they would have been treated prior to HF

50% of pts have no AF symptoms

Hunter et al. Circ EP 2014

Identifying AF→ HF pts

Patients with greatest response:

1. AF precedes or co-incident with HF
2. ECG normal other than AF
3. “Idiopathic” HF
4. No gad enhancement on MRI

Patients with some responseAF precedes or co-incident with heart failure

1. Deterioration in QOL with AF, not improved by rate control

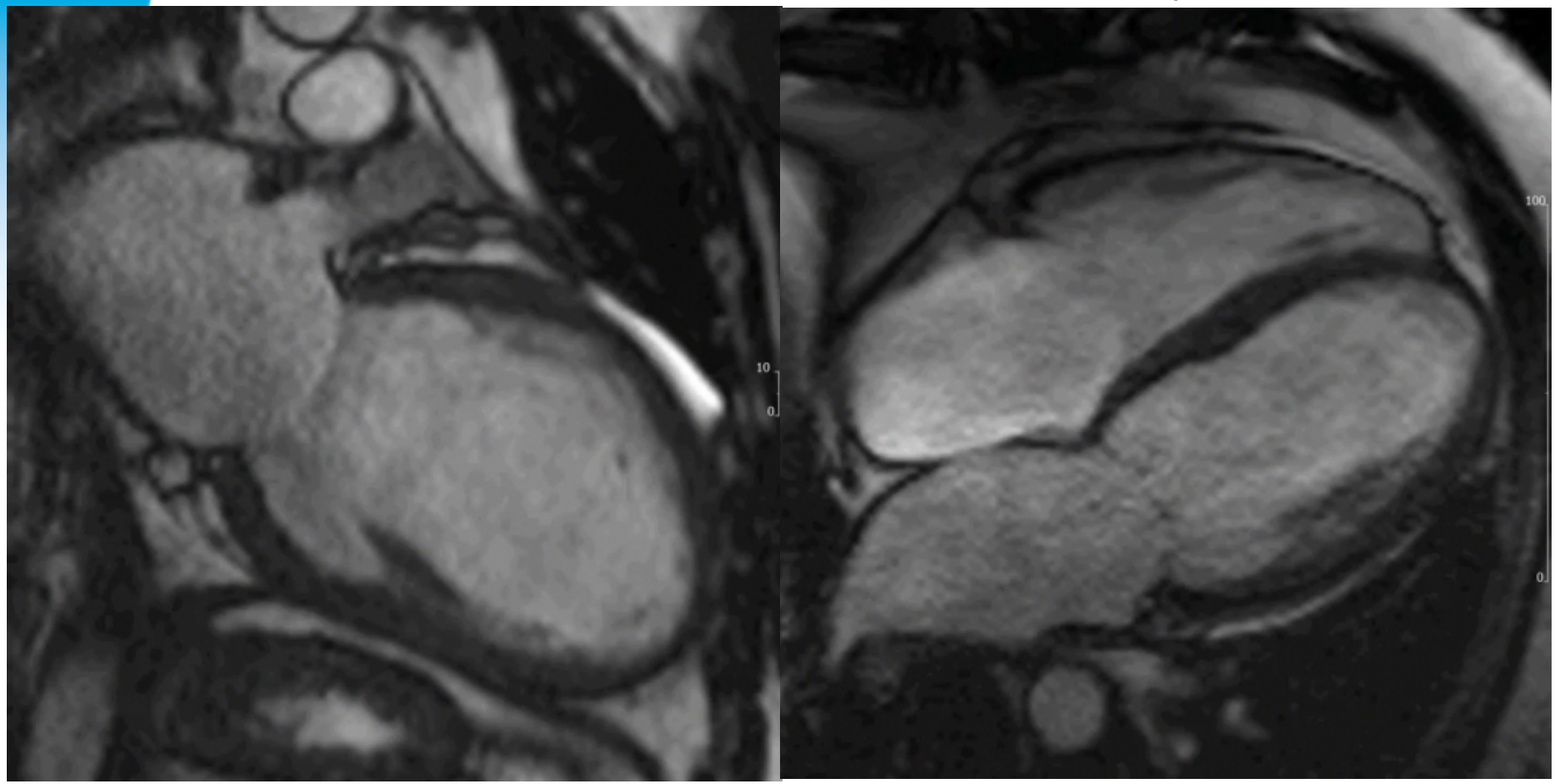
Who has the greatest chance of success

- PAF[1]
- Recent onset AF
- LA size[2]

1) Hunter et al Heart 2010
2) De Potter et al Europace 2010

AF ablation the outcome

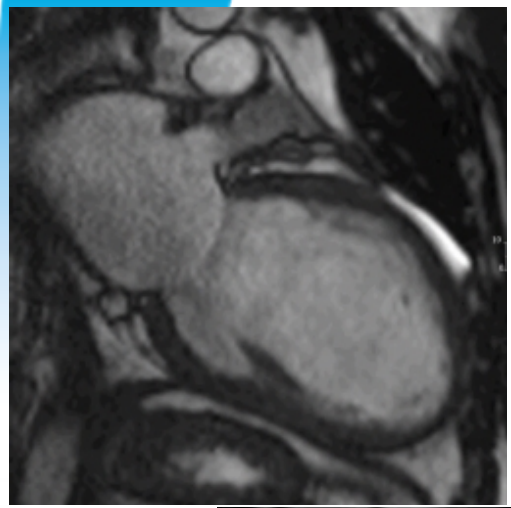
38 male 2 week incr SOB then pulmonary oedema



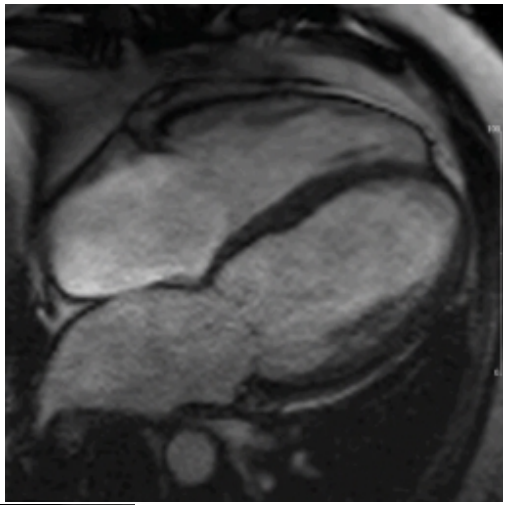
courtesy Dr Sam Mohiddin Barts Heart centre

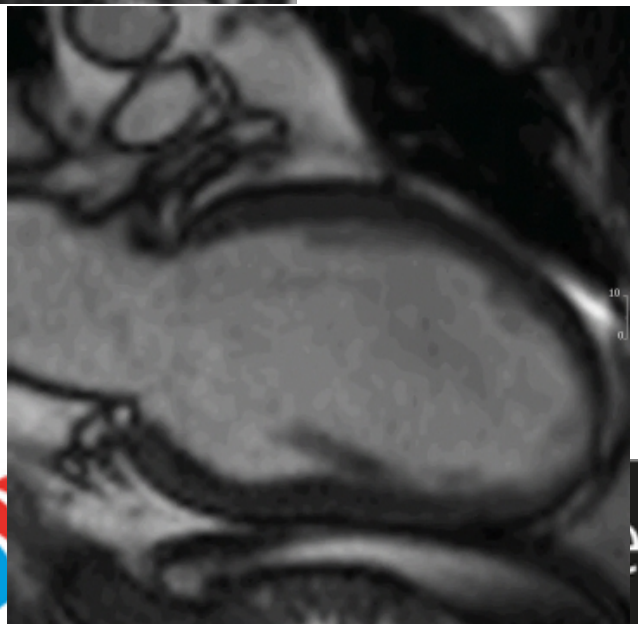
AF ablation the outcome

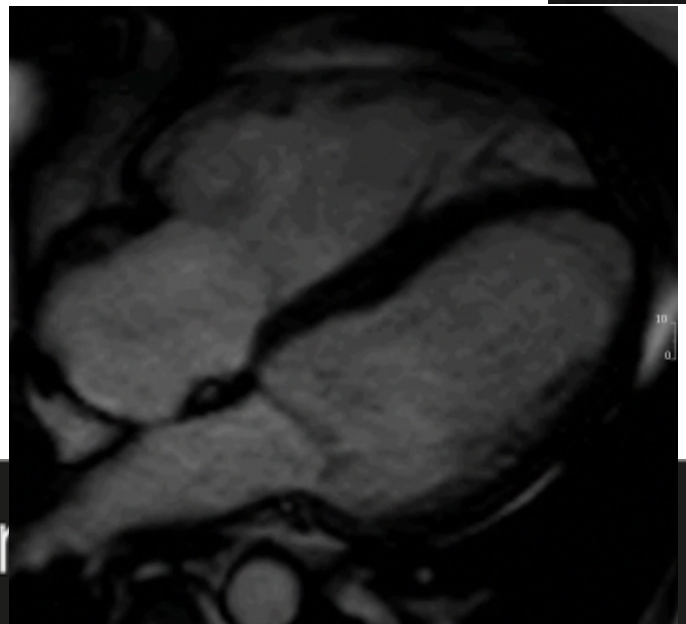
courtesy Dr Sam Mohiddin Barts Heart centre



Before

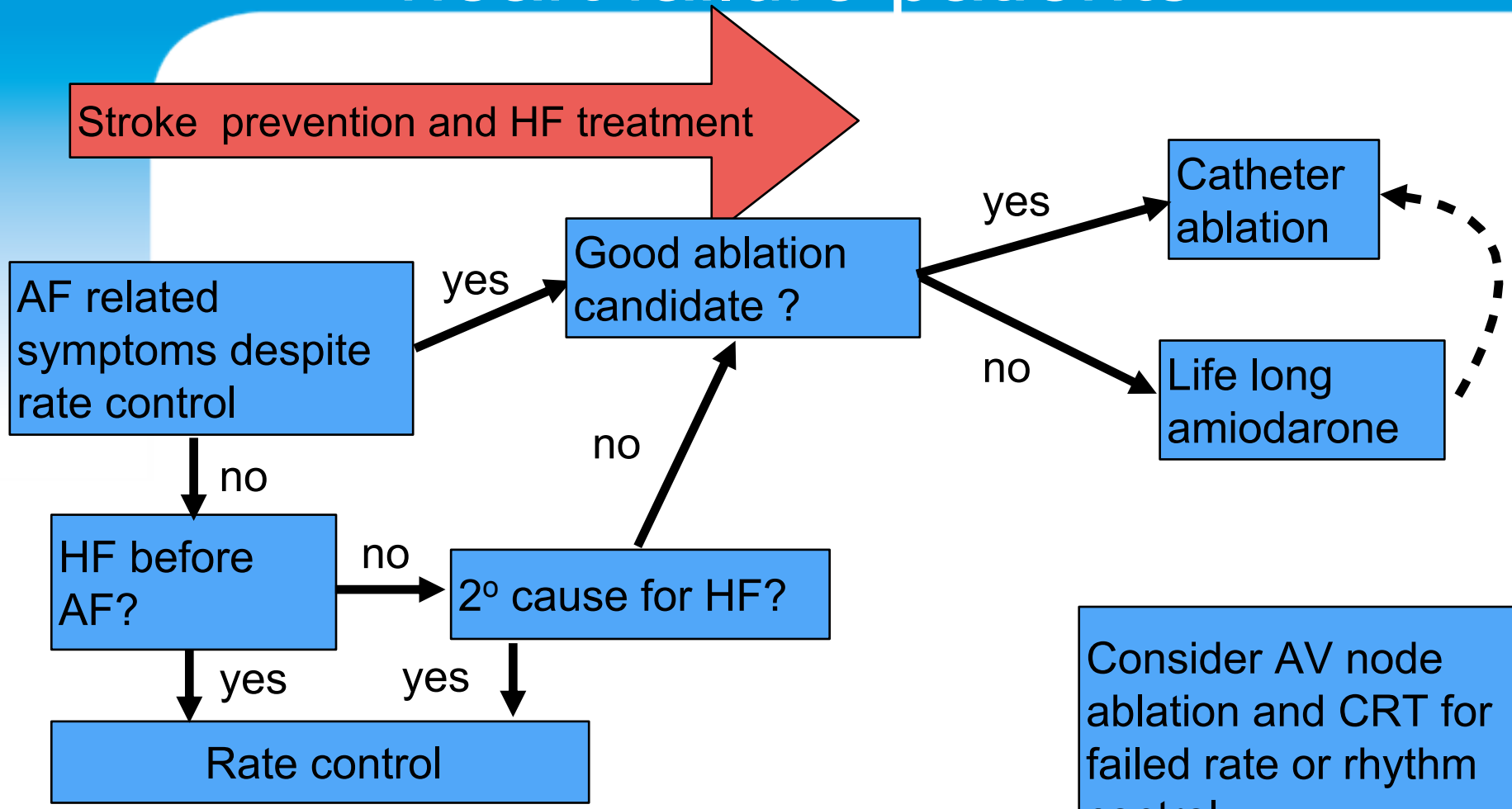






After

Practical management of AF heart failure patients



Conclusions

- Close liaison between HF and EP team
- Clear protocols for management of AF/HF
- Prioritise stroke and heart failure meds
- Do not delay progress along the AF path
- Patient selection critical for best outcomes