STOP HF

The Heartbeat Trust

Cases from STOP HF in the Midlands

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Predict, Protect, Prevent

What are natriuretic peptides?

- Secreted by ventricles in response to stress
- Two main types – BNP and NTproBNP
- Currently used in diagnosis of heart failure
- Evidence suggests other possible uses such as
  - Outpatient monitoring of HF populations
  - CV risk profiling in high risk groups

Why are natriuretic peptides risk indicators?

* Sums the insult of other risk factors
* Respond to
  * Ischaemia
  * Pressure overload
  * Volume overload
  * Inflammation
  * Fibrosis

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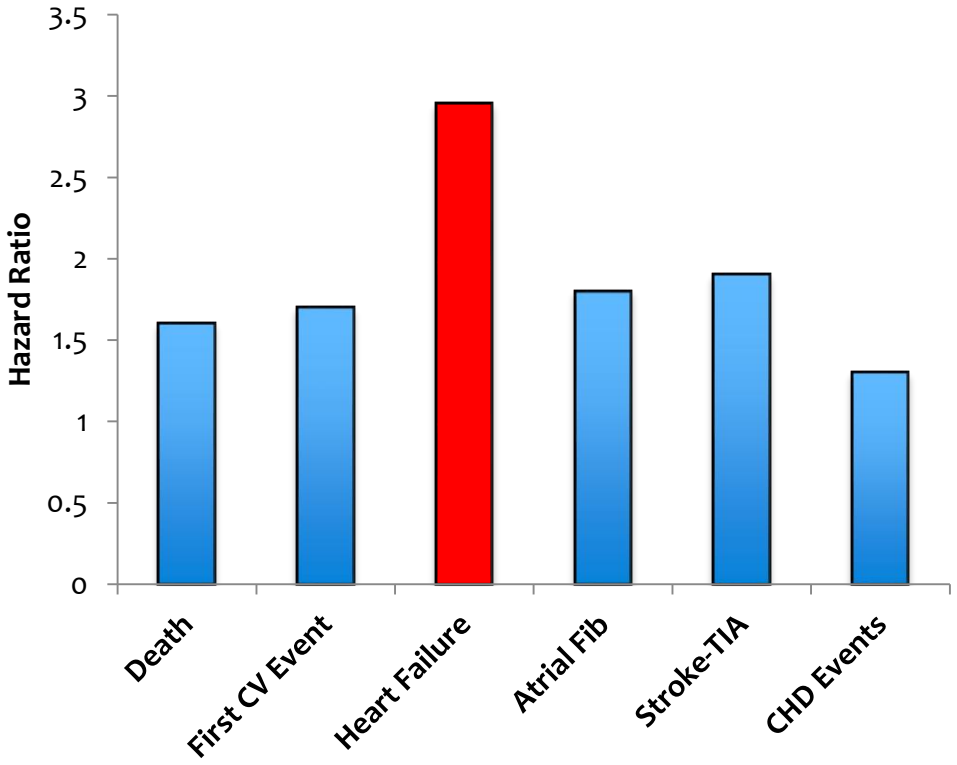
Individualising Risk with NP

Framingham Cohort, Wang et al. NEJM 2004
NP predicts HF and CV Risk



- Peptide secreted in response to
  - Pressure / Volume Overload
  - Ischaemia
  - Fibro-inflammation
- Adds to routine risk prediction
- NP reflects established CV insult rather than risk of CV damage

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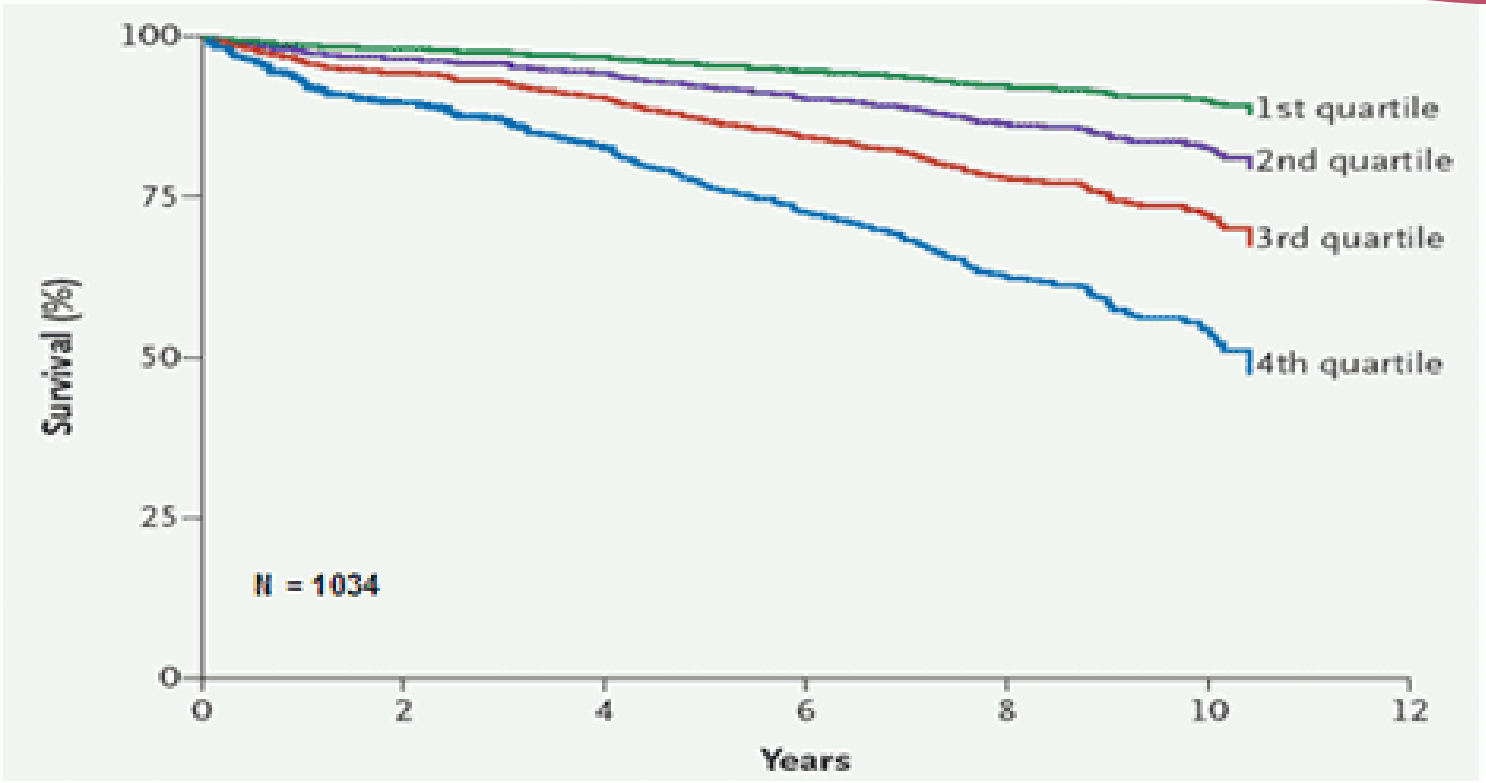
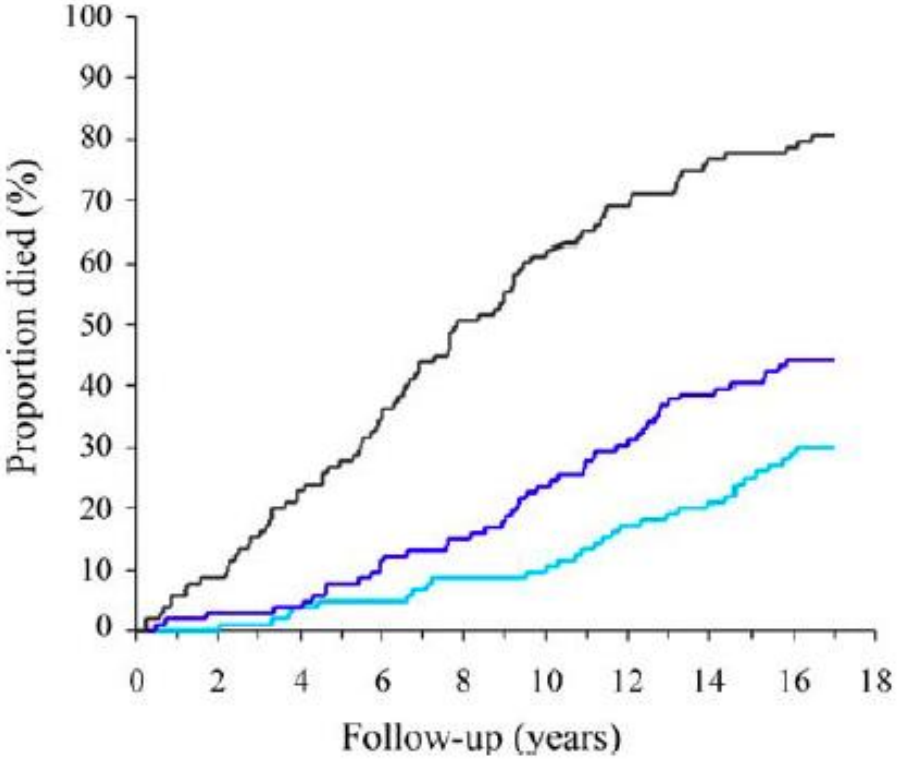


Overall survival among patients with stable coronary artery disease with progressive mortality associated with increasing levels of NT-pro-BNP (adapted from Kragelund et al. NEJM 2005; 352: 666.)



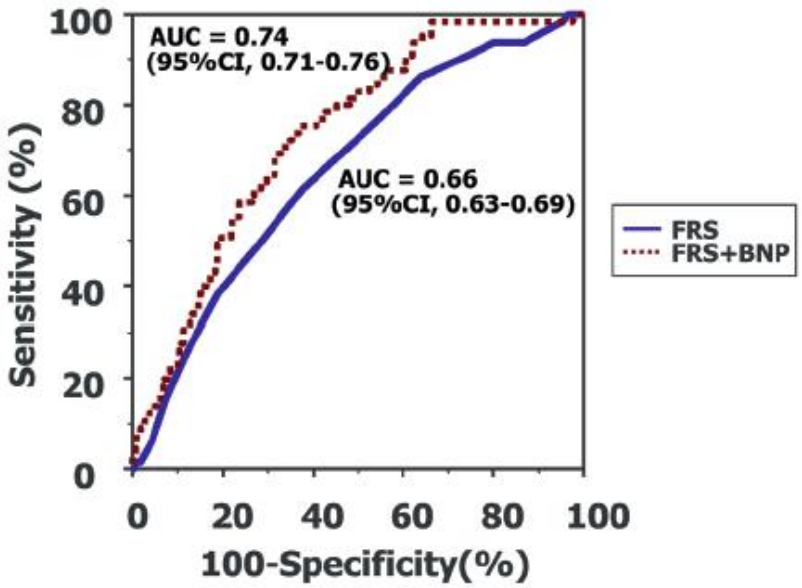
Diabetologia (2006) 49:2256–2262
DOI 10.1007/s00125-006-0359-4

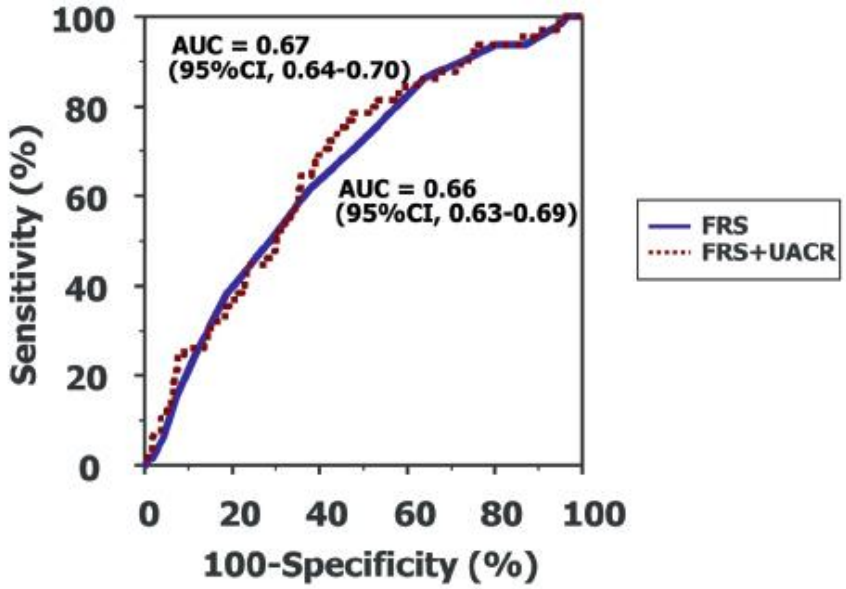
ARTICLE

Plasma N-terminal pro-B-type natriuretic peptide and mortality in type 2 diabetes

L. Tarnow · M.-A. Gall · B. V. Hansen · P. Hovind · H.-H. Parving

Fig. 1 Kaplan–Meier curves of all-cause mortality in 315 type 2 diabetic patients according to tertiles of NT-proBNP. *Black line*, upper tertile (NT-proBNP >103 ng/l); *dark-blue line*, middle tertile; *light-blue line*, lower tertile (NT-proBNP <41 ng/l). Log-rank test for overall difference, $p<0.0001$

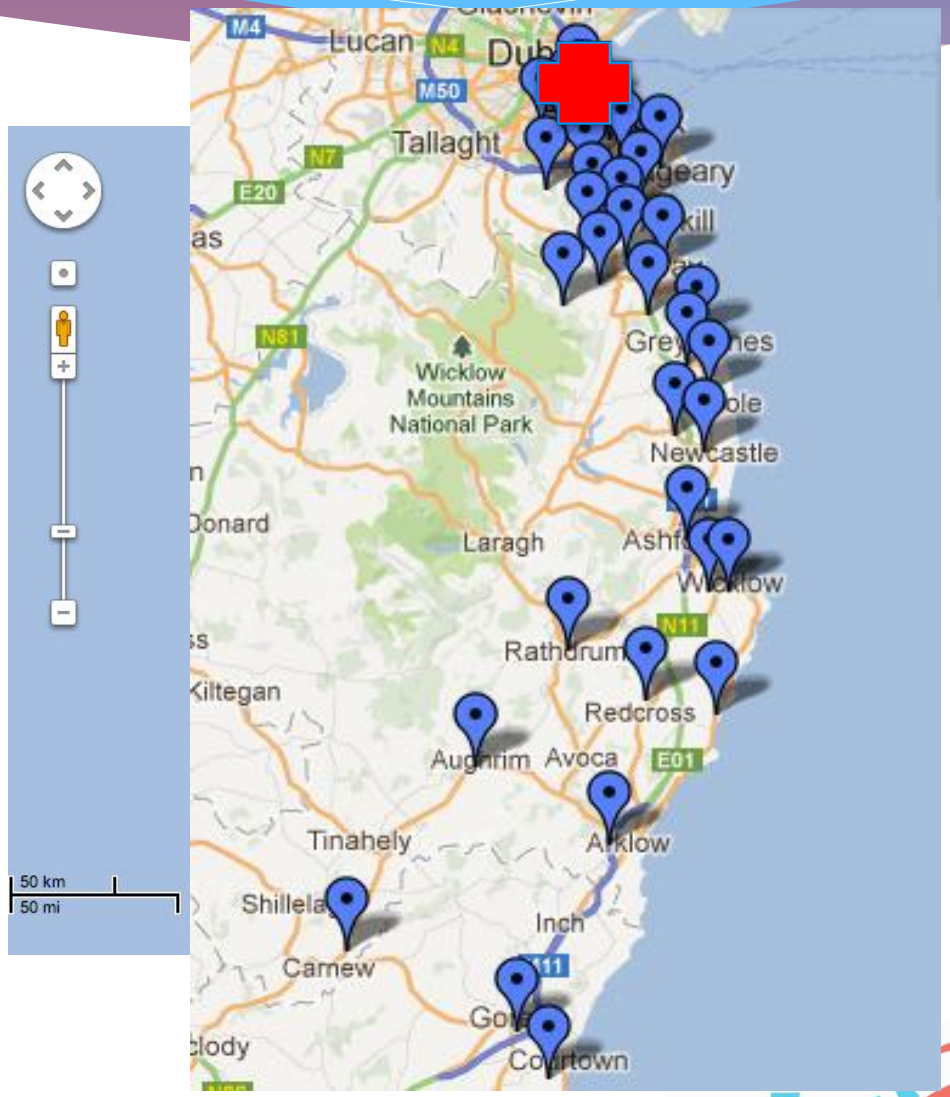

AUC = 0.74
(95%CI, 0.71-0.76)
AUC = 0.66
(95%CI, 0.63-0.69)
Sensitivity (%)
100-Specificity(%)
FRS
FRS+BNP


AUC = 0.67
(95%CI, 0.64-0.70)
AUC = 0.66
(95%CI, 0.63-0.69)
Sensitivity (%)
100-Specificity (%)
FRS
FRS+UACR

STOP-HF Hypothesis

- NP-driven screening and targeted collaborative care in the general at-risk population will decrease the prevalence of LVD and HF

- 39 collaborating primary care practices, intervention provided in a single referral centre



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STOP-HF Study Inclusion/Exclusion

- Entry Criteria
  - >40 yrs
  - Hypertension
  - Hyperlipidaemia
  - Diabetes
  - Vascular disease
  - Arrhythmia
  - Obesity

- Excluded
  - Known LVSD or HF
  - Life threatening illness
  - Refusal to give informed consent

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STOP-HF Intervention

Routine PCP care

- Annual BNP not available to clinicians
- At least annual review by PCP
- Cardiology review only if requested by PCP

NP-directed care

In addition to routine PCP care

- Annual BNP in all

If BNP >50pg/ml at any time

- Shared-care
  - Cardiology review
  - Echo-Doppler
  - Other CV investigations
  - CV nurse coaching
  - Regular Cardiology follow-up

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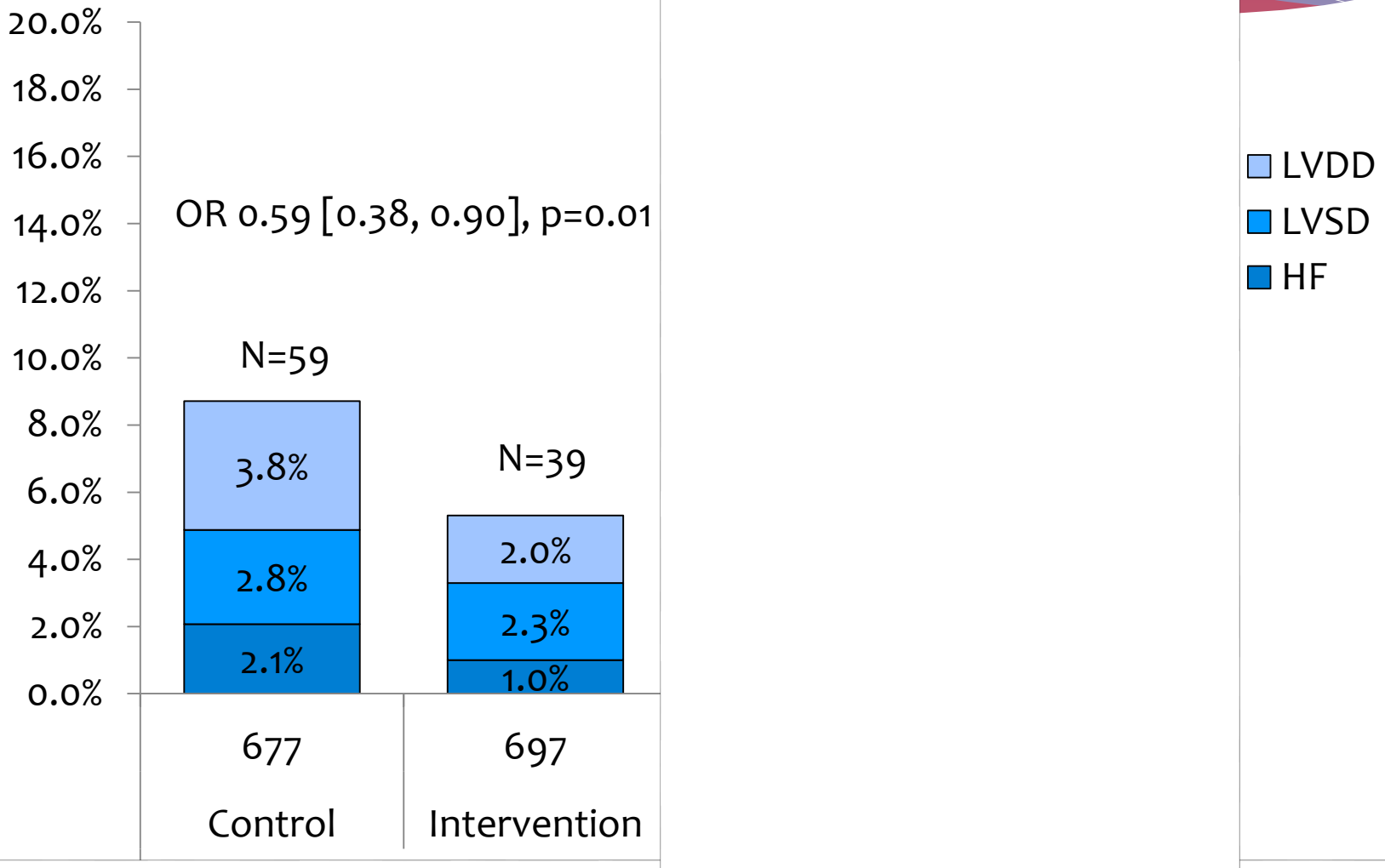
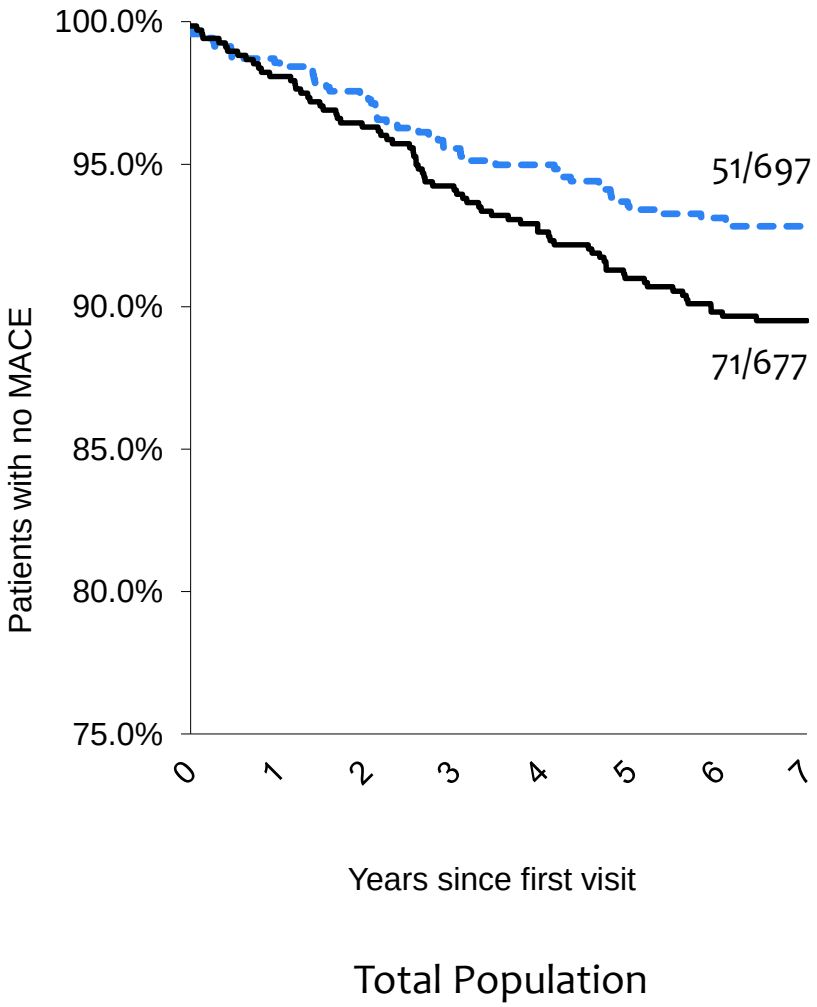
Primary Endpoint – HF and LVD



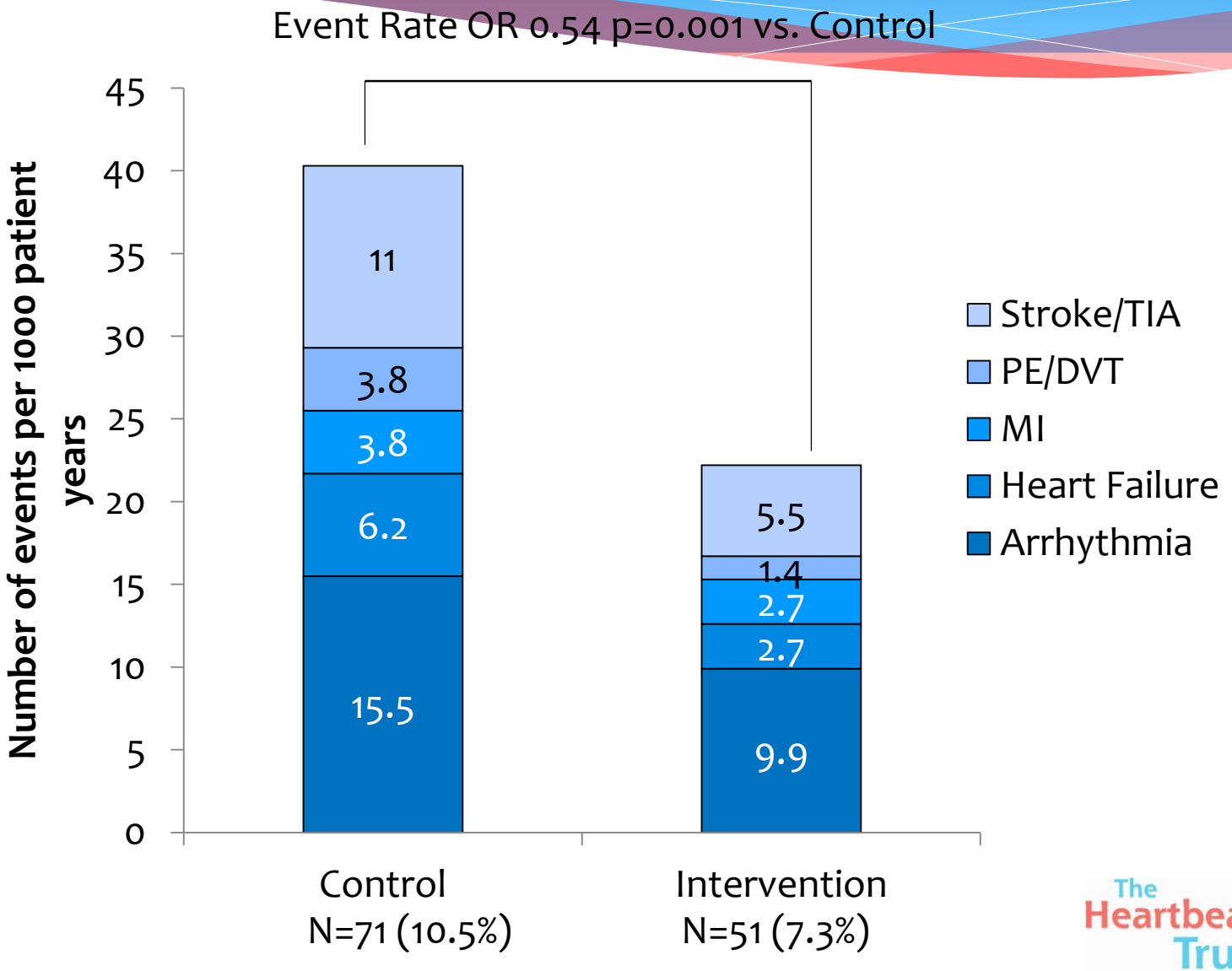
Endpoint – Time to First MACE

OR 0.67 [0.46,0.98] p=0.04



Total Population

Endpoint – MACE Event Rate



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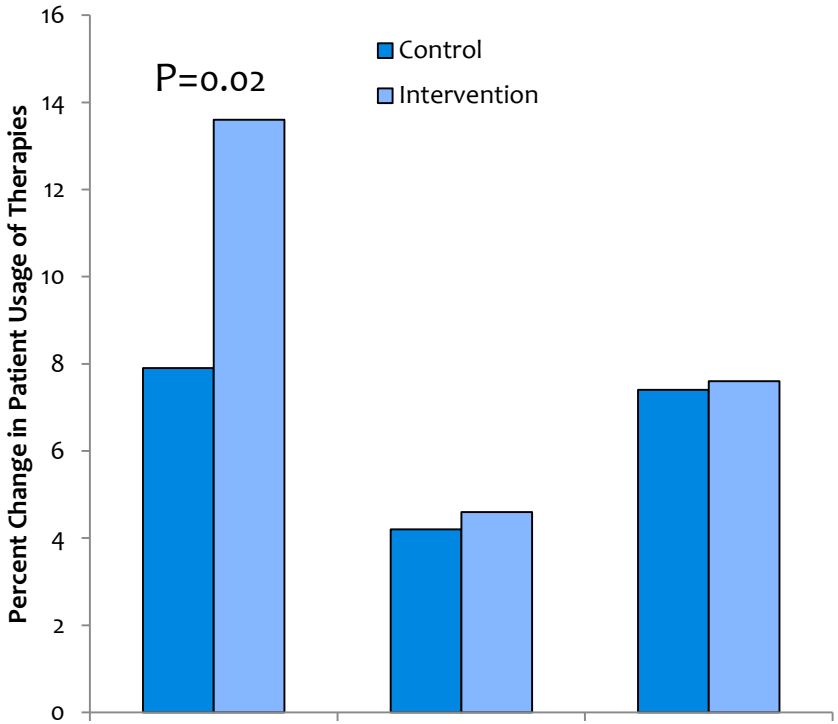
Therapies and Risk Factors

	SBP (mmHg)	HR (bpm)	LDL-C (mg/dL)
	-9.2 -9.9	0.0 -1.2	0.0 -2.9



Baseline (%)	ACEi/ARB/AA	Beta blockers	Statins
	42 43	25 27	52 53

* BP significantly reduced within both groups ($p<0.001$) from baseline
* Increased use of RAAS modifying therapies in intervention group
* No differences in change of SBP, HR, LDL-C between control and intervention
* Strong trend to lower HR and LDL-C (both $p=0.06$) in high BNP subsets

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Design of the Pontiac Trial

No cardiac Disease
NT proBNP> 125

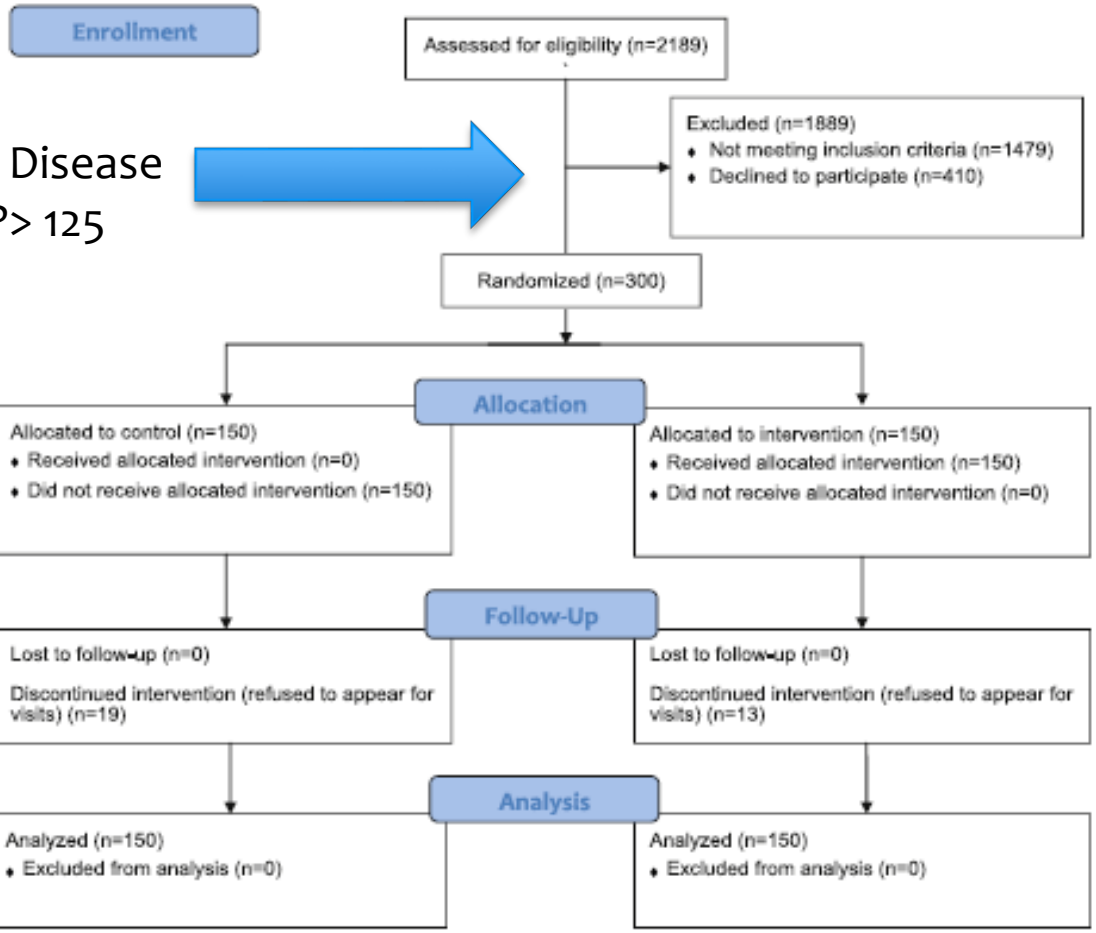


Figure 1 Flow Diagram

NP Directed Therapy Reduces Events in Patients with Diabetes without CV Disease

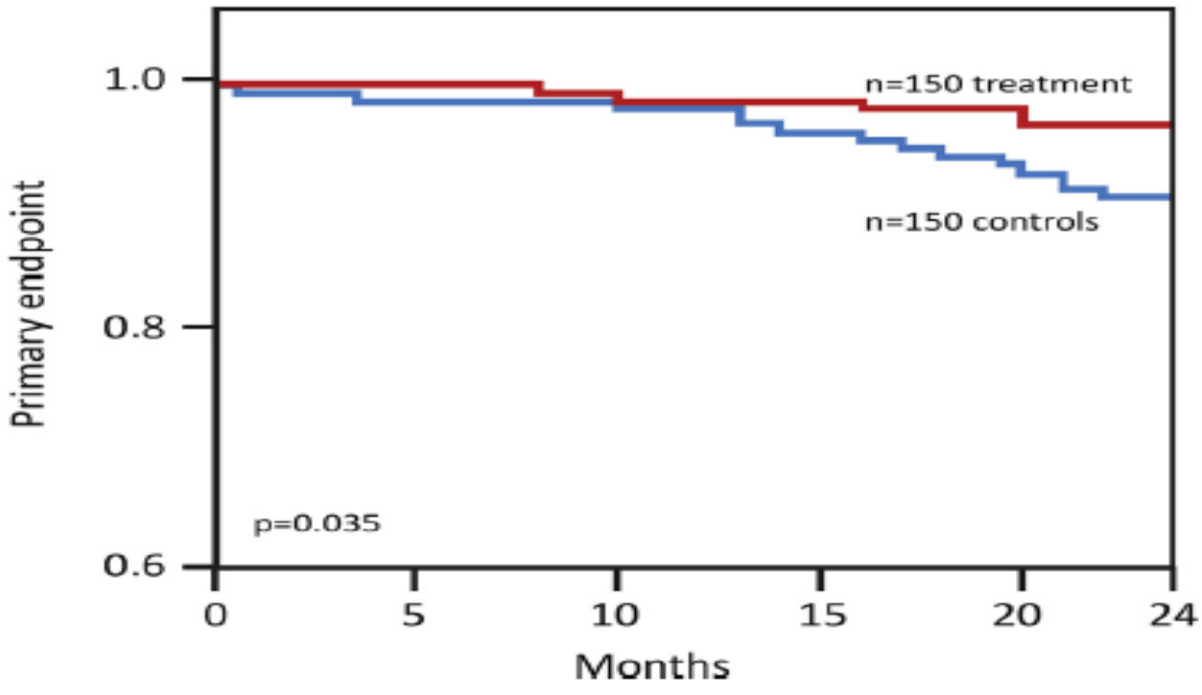


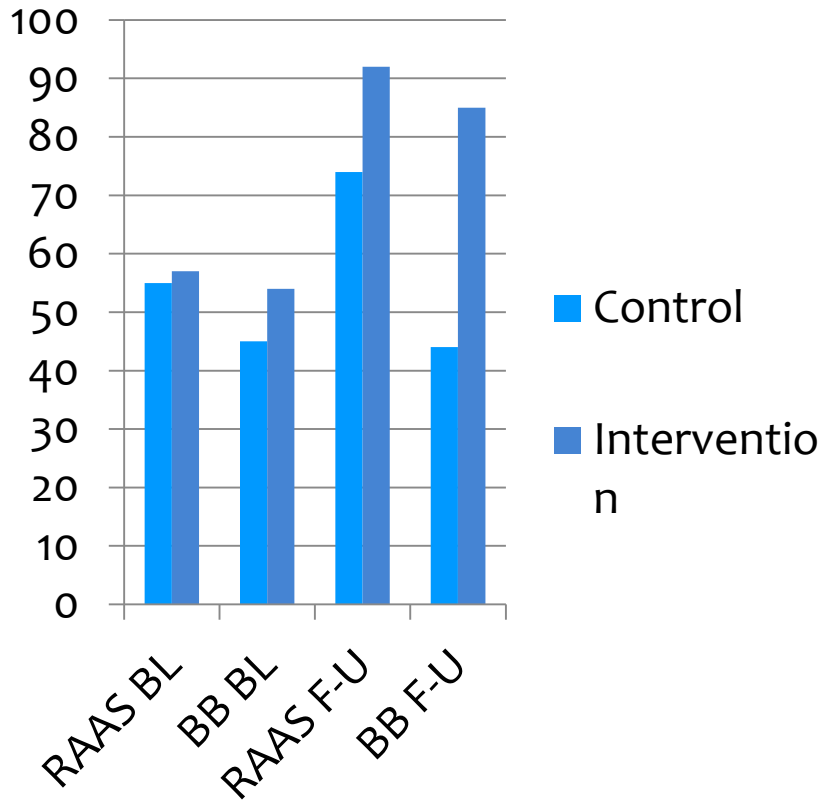
Figure 2 **Kaplan-Meier Curves of the Primary Endpoint Hospitalization or Death Due to Cardiac Disease According to Treatment Strategy**

Red line = intensified group. **Blue line** = control group. Log-rank test for overall difference, p = 0.035.

Huelsmann et al , JACC 2013
PONTIAC Trial

% Achieving Target Dose of RAAS and BB Rx at Follow Up

- Significantly more patients in the Intervention arm achieved TD in both BB and RAAS modifying Rx
- No difference in BP or HR
- No change in NT pro BNP
- No significant hypotensive – related side effects
- No renal dysfunction



Pontiac Study
JACC 2013

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