

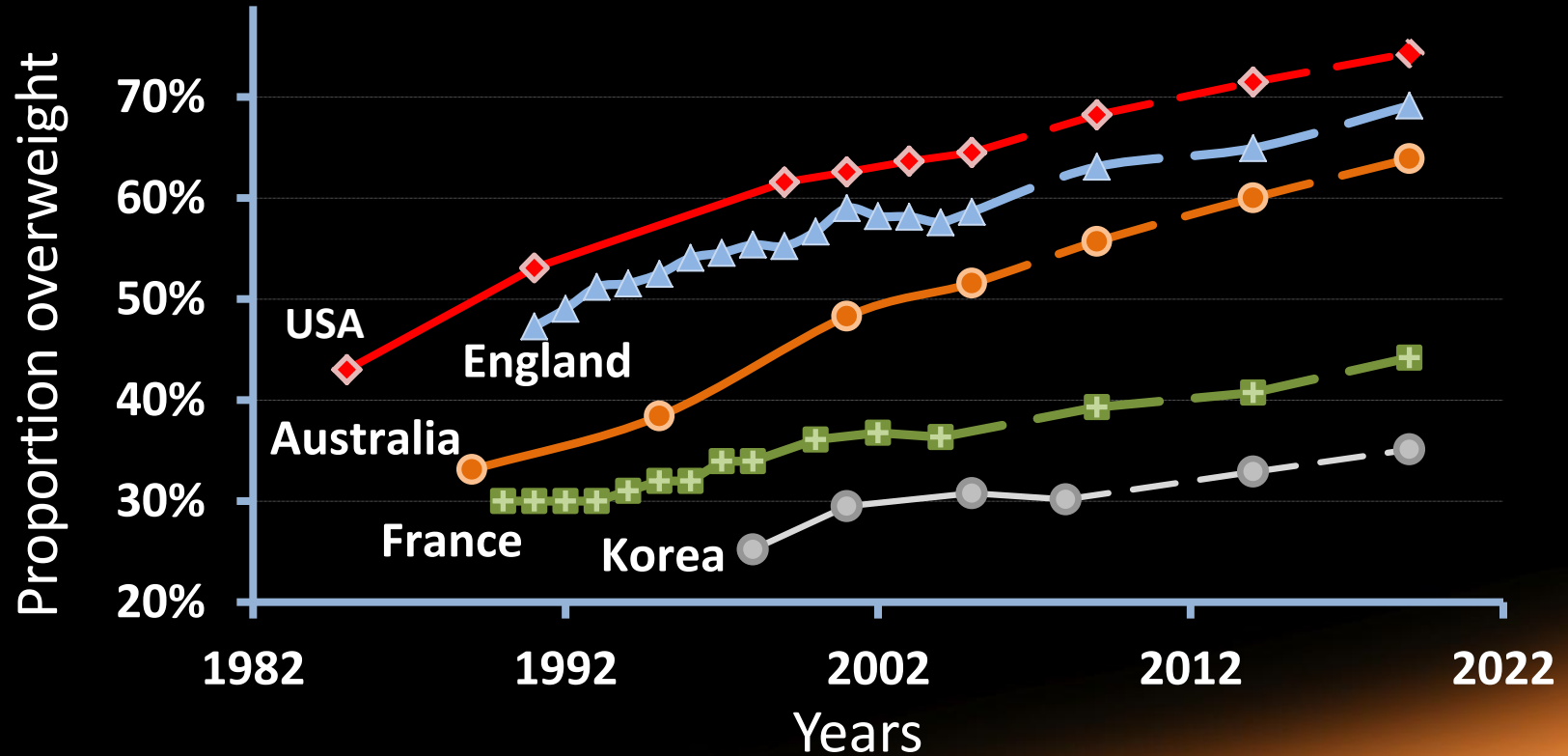
Long-Term Effect of Goal Directed Weight Management in an Atrial Fibrillation Cohort: A 5 Follow-Up Study (LEGACY STUDY)

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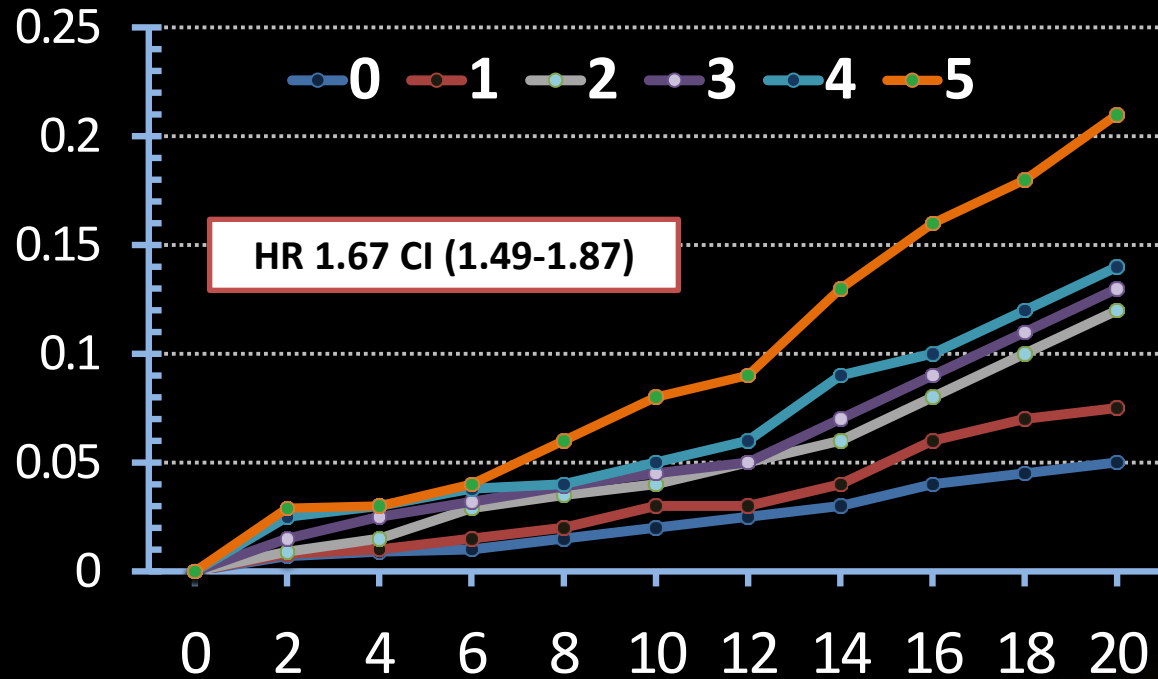


Obesity: Past and Projected Rate



Sassi et.al, OCED Publishing, 2014

Probability of AF in Metabolic Syndrome

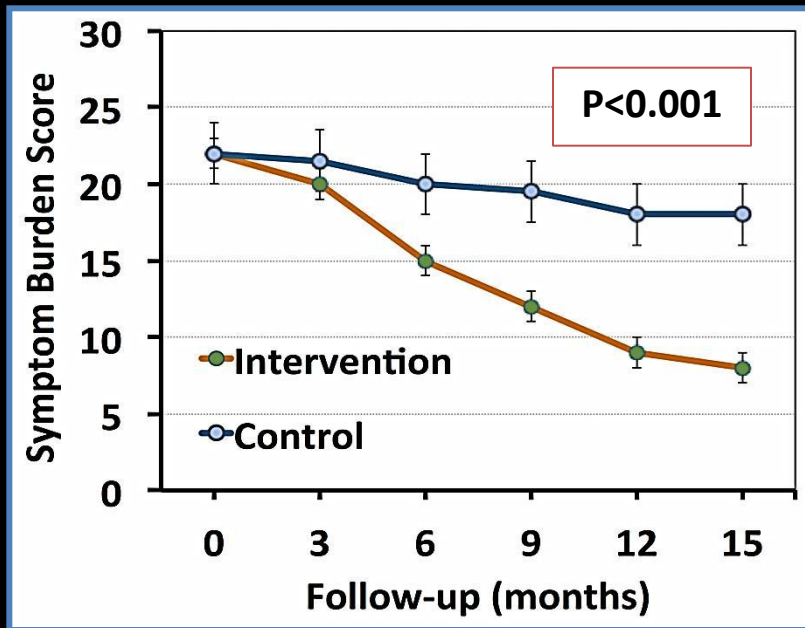


Chamberlain et al, ARIC Study, AHJ 2010

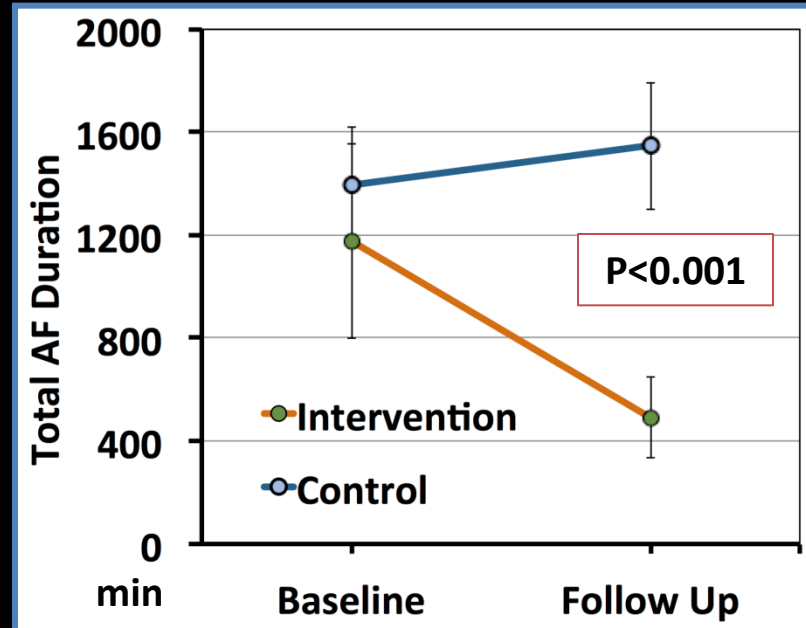
HR (CI)	
Metabolic Syndrome Component	
Elevated waist circumference	1.40 (1.23-1.59)
Elevated blood pressure	1.95 (1.72-2.21)
Elevated triglycerides	0.95 (0.84-1.09)
Low HDL cholesterol	1.20 (1.06-1.37)
Impaired fasting glucose	1.16 (1.03-1.31)

Short-Term Effect of Weight Loss

AF Symptom Burden



AF Duration



Hypothesis

- Weight loss, if sustained, will be of incremental benefit in rhythm control
- Weight fluctuation has detrimental effect

Aims

- Dose dependent effect of long term weight loss on freedom from AF
- Impact of weight fluctuation
- Role of dedicated clinic

Outcomes

Primary Outcomes

- AF symptom burden: AFSS questionnaire
- AF freedom: 7 day Holter monitoring

Secondary Outcomes

- Structural parameters: LAV and LV thickness
- Metabolic and Inflammatory profile

**Assessed for Eligibility
N=1415**

**Patients with BMI ≥ 27
N=825**

Weight Management

**Final Cohort
N=355**

**<3%WL or WG
N=117**

**3-9%WL
N=103**

**$\geq 10\%$ WL
N=135**

Met Exclusion Criteria (N=293)

Terminal Cancer (N=10)

Inflammatory Dx (N=20)

Permanent AF (N=84)

AV Node ablation (N=12)

AF ablation (N=90)

Severe Medical Illness (N=77)

Patients from other States (N=177)

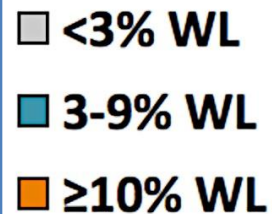
Baseline Characteristics

	<3% Wt Loss N= 117	3-9% Wt Loss N = 103	≥10% Wt Loss N = 135	P Value
Age (years)	61±11	63±11	65±11	0.06
Male gender, n (%)	83 (71)	65 (63)	86 (64)	0.4
Non-Paroxysmal AF, n (%)	45 (56)	46 (45)	64 (47)	0.9
BMI	32.9±4.8	32.7±4.4	33.6±4.7	0.2
Hypertension	90 (78)	75 (73)	109 (81)	0.3
DM/IGT, n (%)	34 (29)	28 (27)	41 (30)	0.5
Hyperlipidemia, n (%)	56 (48)	45 (44)	66 (49)	0.7
CAD, n (%)	14 (12)	12 (12)	21 (16)	0.3
AHI>30, n (%)	61 (52)	52 (50)	69 (51)	0.1
Smoker, n (%)	47 (40)	41 (40)	50 (37)	0.9
ETOH (>30g/week), n (%)	34 (29)	35 (34)	42 (31)	0.7

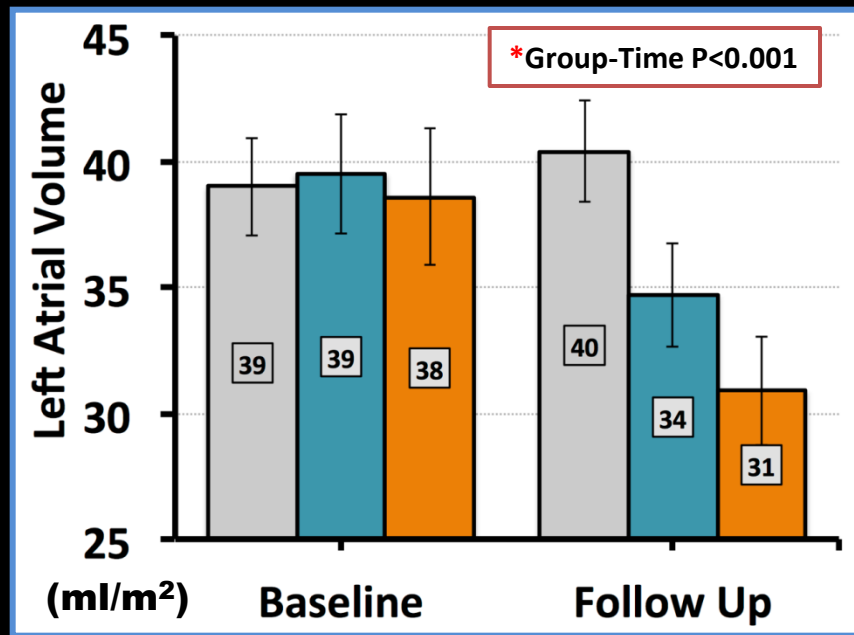
Impact on Risk Factors

	<3% Wt Loss N= 117		3-9% Wt Loss N = 103		≥10% Wt Loss N = 135		P Value
	Baseline	Follow Up	Baseline	Follow Up	Baseline	Follow Up	
SBP (mmHg)	146±17	139±15	144±17	134±14	147±17	129±12	<0.001
Anti-HTN, n	0.8±1.0	1.0±0.7	0.7±0.8	0.7±0.6	1.0±0.9	0.5±0.6	<0.001
DM with HbA1c≥7, n (%)	34 (29)	23 (20)	28 (27)	15 (15)	40 (30)	5 (4)	<0.001
Fasting Insulin (mU/L)	14.5±6.9	17.3±9.6	16.9±6.1	14.8±9.4	18.3±7.1	8.4±3.9	<0.001
LDL Level (mg/dL)	104±35	108±31	116±35	93±23	116±37	89±31	<0.001
TG Level (mg/dL)	141±62	159±62	141±53	115±53	141±62	97±35	<0.001
Lipid Rx n (%)	56 (48)	54 (46)	45 (44)	38 (37)	66 (49)	37 (27)	<0.001

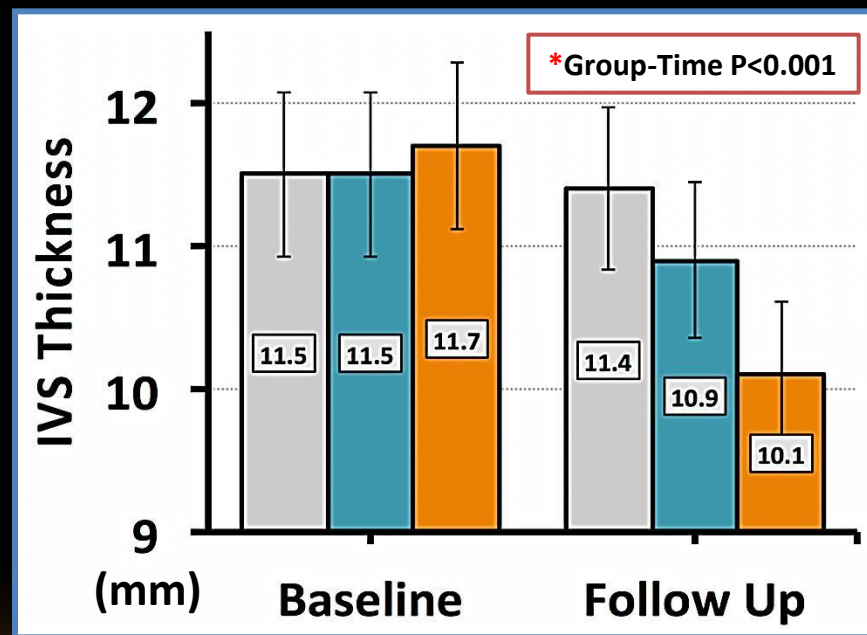
Structural Remodeling



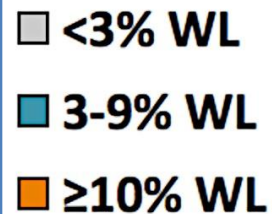
LA Volume (Indexed)



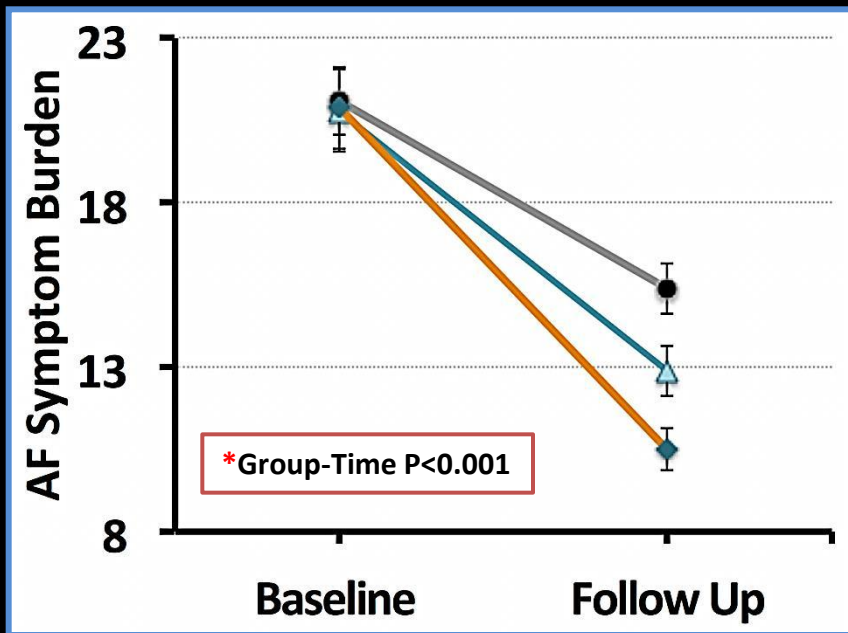
Septal Dimension



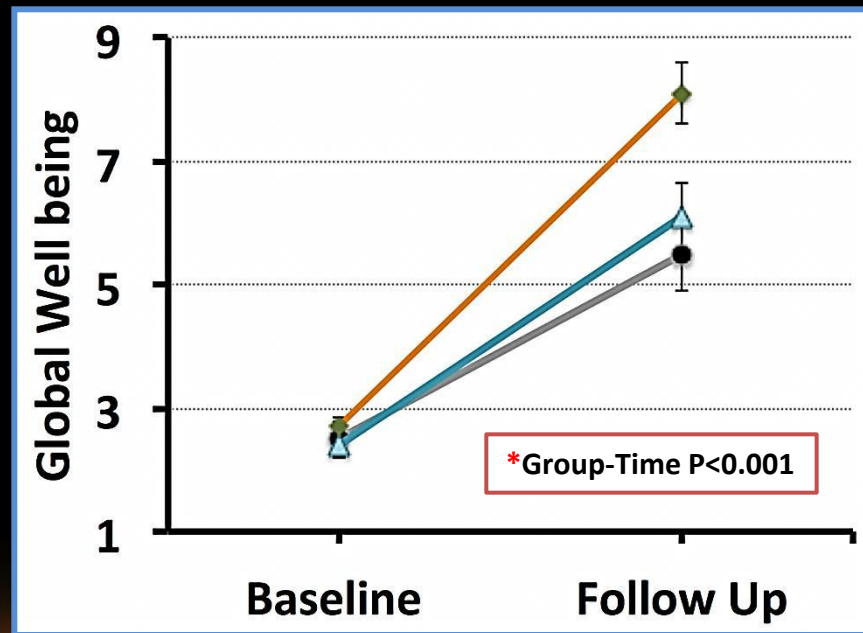
Impact on AF Symptoms



AF Symptom Burden

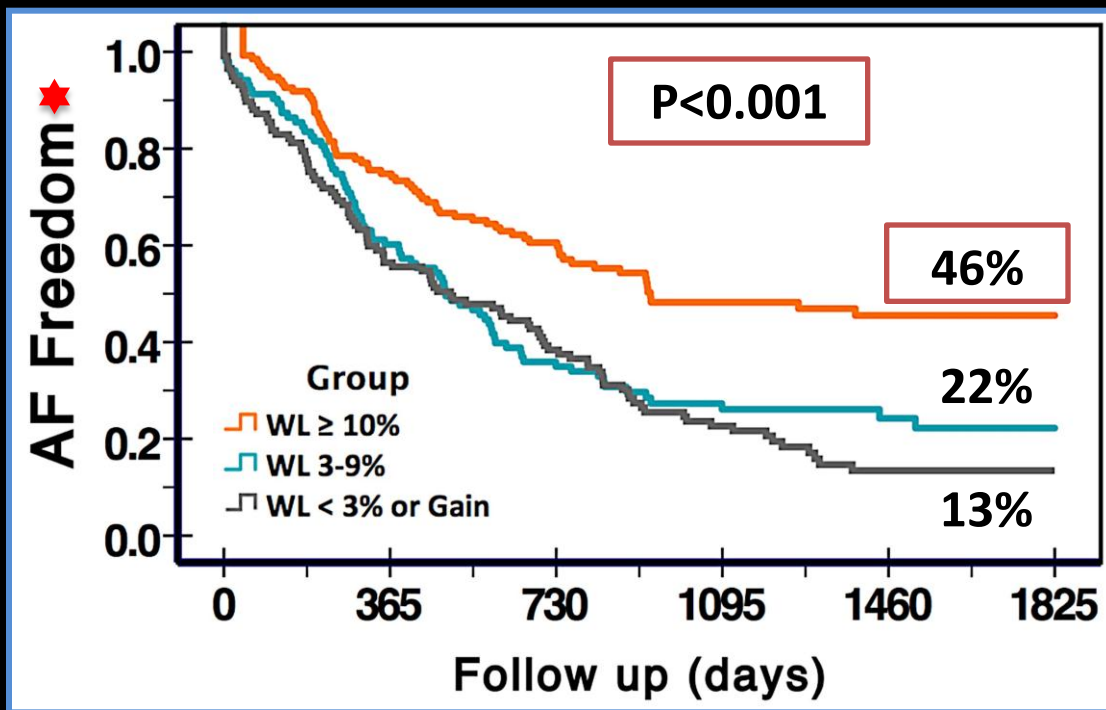


Global Well Being Score



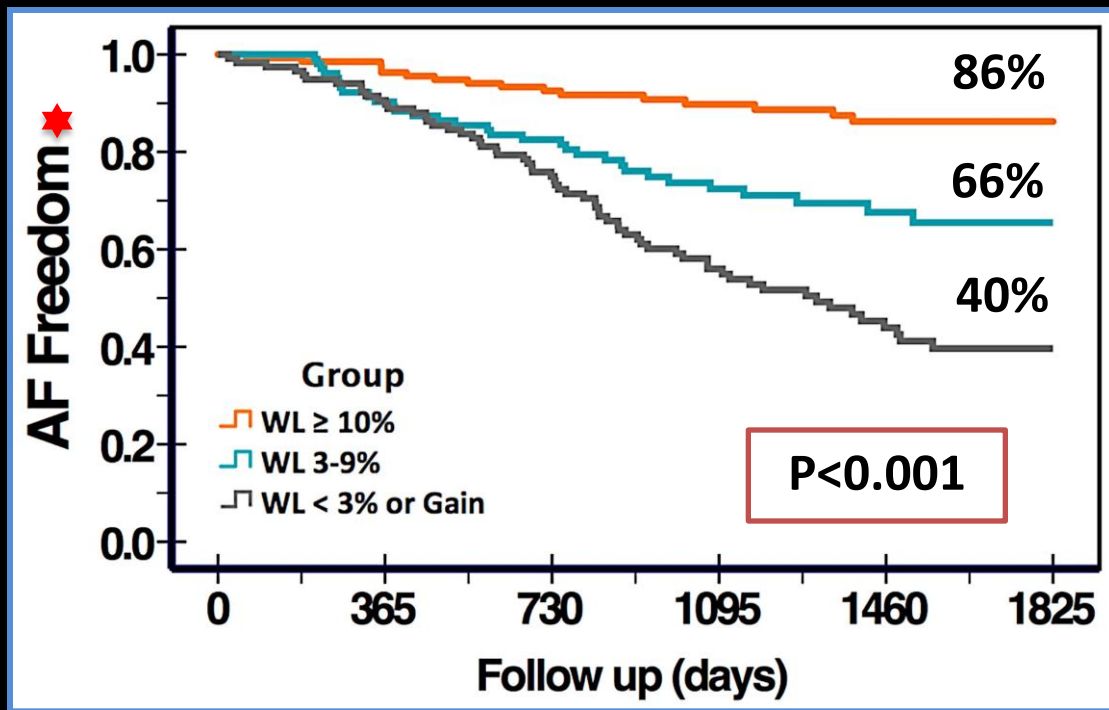
AF Freedom: Drug & Ablation-Free

★ Without AAD
or ablation

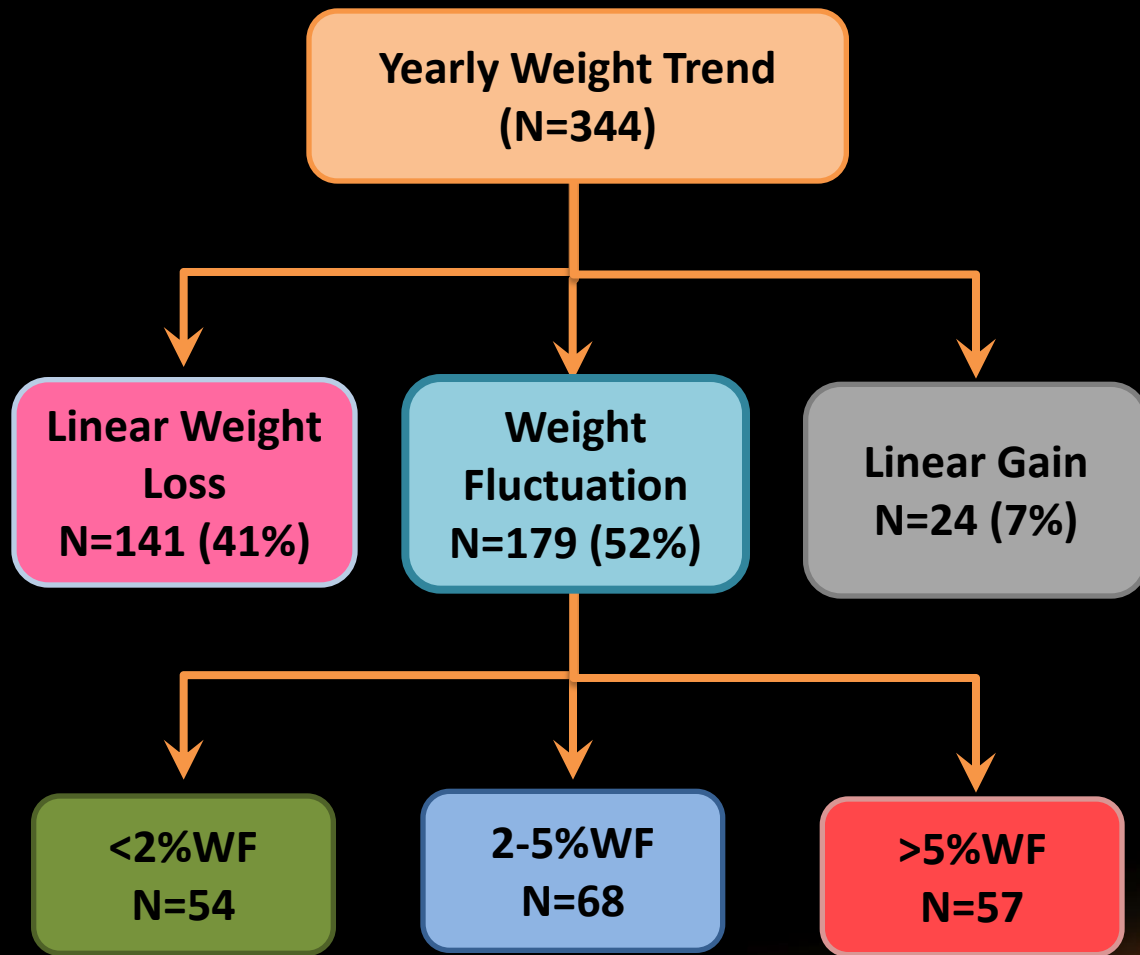


Days	0	365	730	1095	1460	1825
≥10%WL	135	101	72	42	31	18
3-9% WL	103	62	36	22	13	7
<3% WL	117	66	44	22	11	9

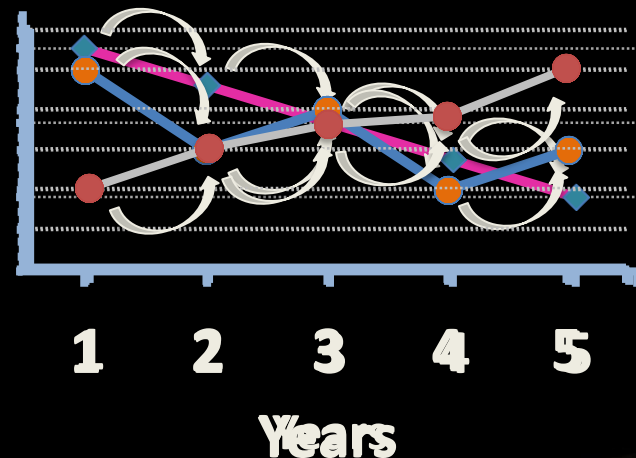
Total Arrhythmia-Free Survival



Days	0	365	730	1095	1460	1825
$\geq 10\% \text{ WL}$	135	130	114	86	67	36
3-9% WL	103	93	83	57	35	22
$< 3\% \text{ WL}$	117	105	85	53	32	22

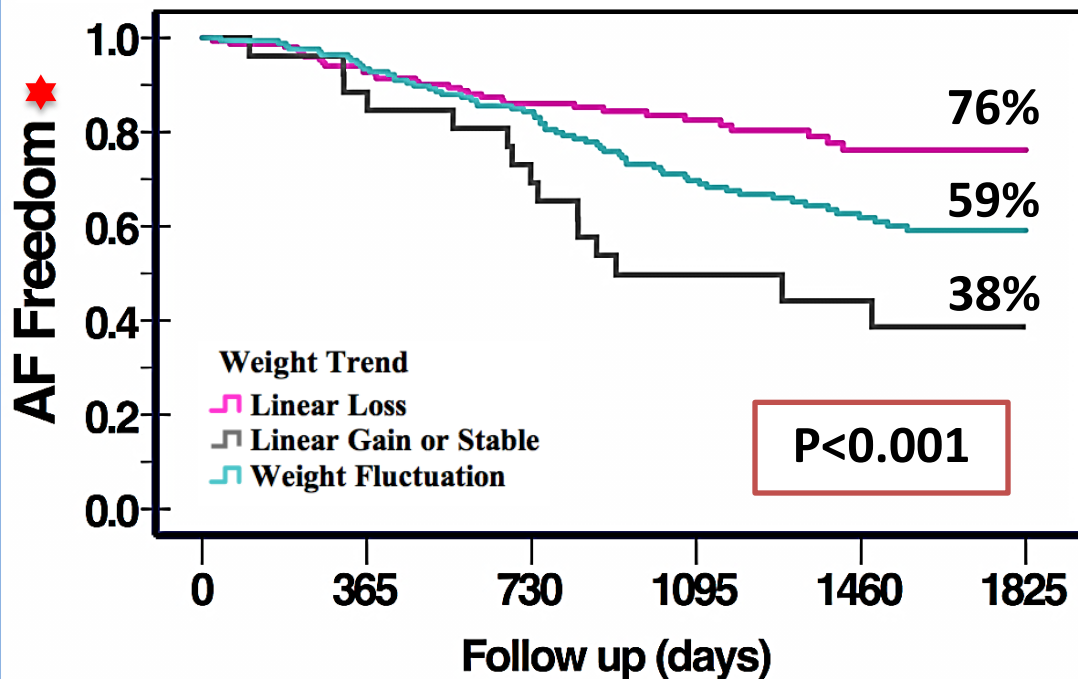


Effect of
Weight Loss Trend



Effect of Degree of
Weight fluctuation

Weight Loss Trend

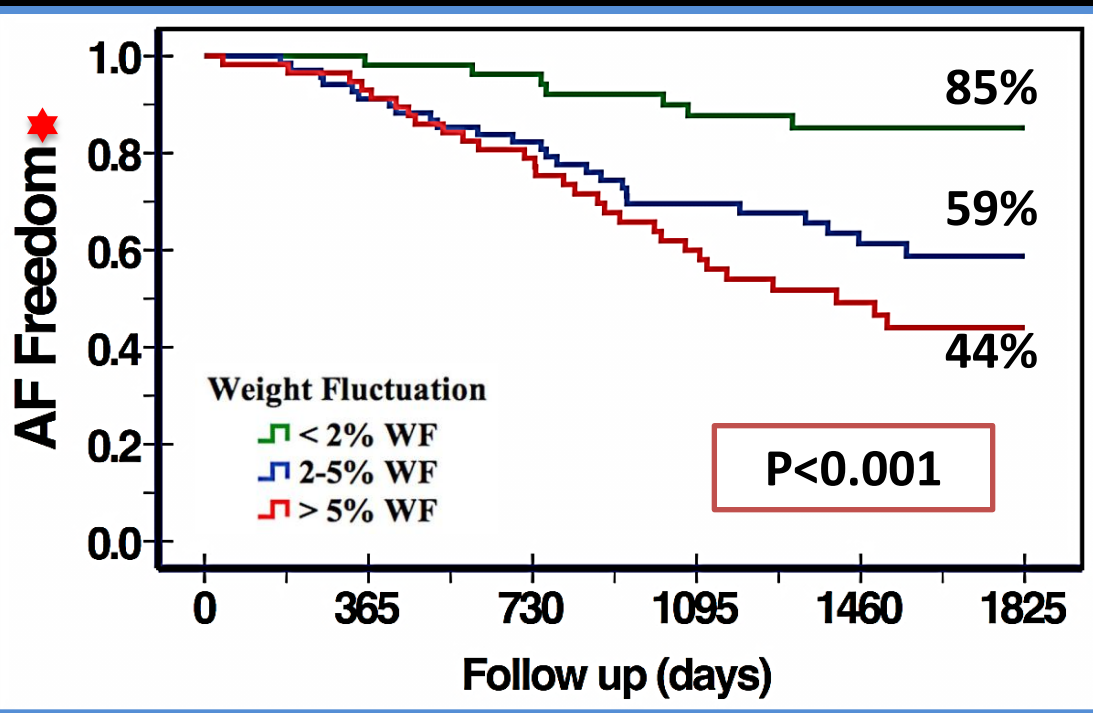


★ With AAD +/- ablation

Days	0	365	730	1095	1460	1825
Linear Loss	141	130	122	80	52	29
Wt. Fluctuation	179	165	140	99	71	44
Linear Gain	24	20	18	12	8	5

Effect of Weight Fluctuation

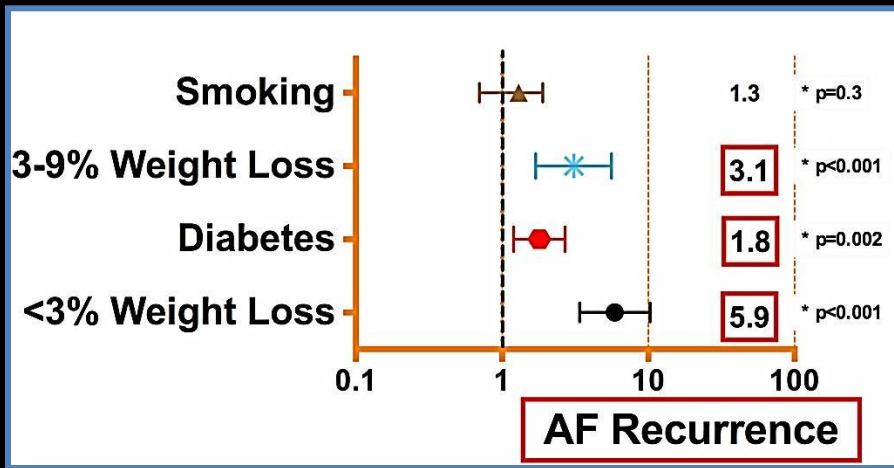
★ With AAD +/- ablation



Days	0	365	730	1095	1460	1825
<2% WF	54	52	49	39	33	19
2-5% WF	68	62	54	39	27	15
>5% WF	57	53	45	31	19	14

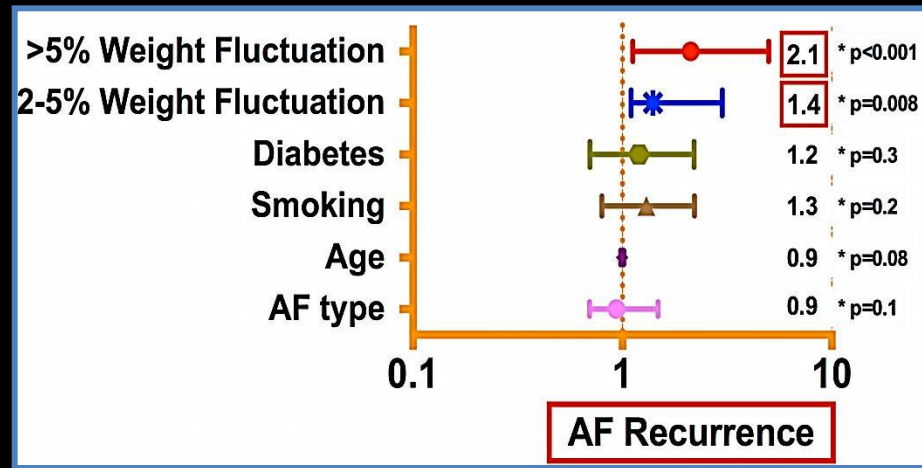
Multivariate Predictors of AF Recurrence

Weight Loss



$\geq 10\%$ weight loss was associated with AF free survival: HR 5.7 [95% CI: 3.3-10.1] (P<0.001)

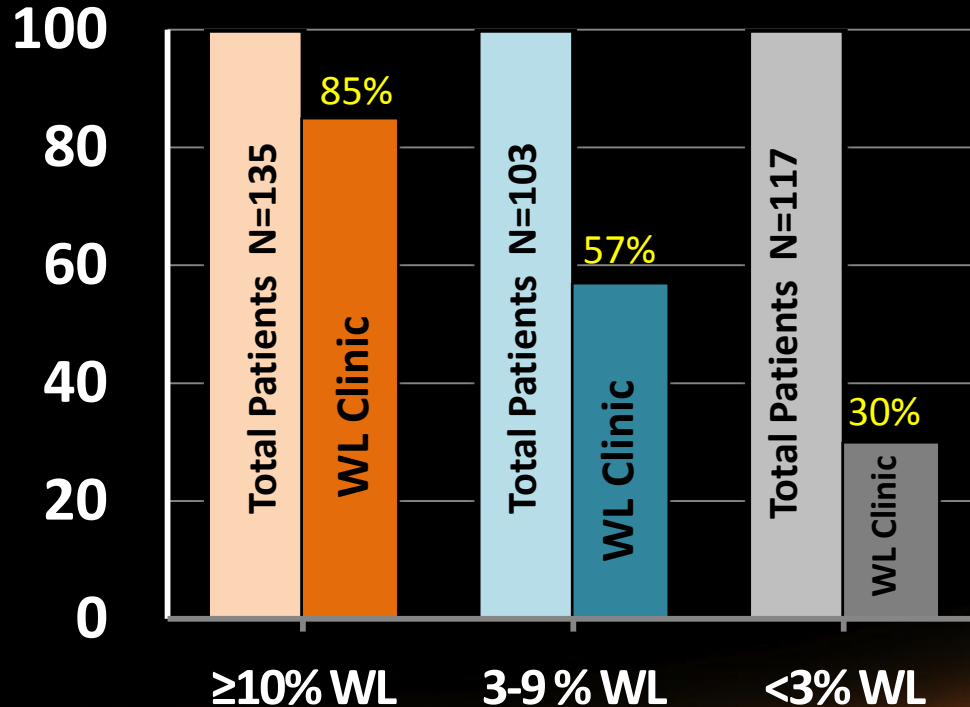
Weight Fluctuation



>5% weight fluctuation was associated with AF recurrence: HR 2.2 [95% CI: 1.1-4.2] (P<0.001)

Implications of Dedicated Weight Loss Clinic

Successful Weight Loss



Weight Maintenance

- 52 patients lost $>10\%$ weight in first year
- 34/52 (66%) maintained WL
- 30/34 (85%) attended WL clinic
- 18 regained weight, only 2 (11%) attended clinic

Conclusions

- Sustained weight loss is associated with dose dependent reduction in AF burden and maintenance of sinus rhythm
- >5% Weight fluctuation dampens the benefit conferred by weight loss
- A dedicated clinic improves patient engagement, promoting treatment adherence, preventing weight regain and fluctuation



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