

# Non-clinical interventions for AF

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Barts Health **NHS**  
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# Outline

- Weight reduction
- Alcohol
- Caffeine
- Exercise
- Blood pressure control



# Is obesity associated with AF?

- 51646 pts with no AF from 7 US and European cohort studies
- follow up 7.4 to 19 years
- 4179 AF cases
- BMI and AF
- BMI gene scores and AF



# Association with BMI and AF

RF adjustments	AGE, SEX	+ Smoking alcohol	+ BP,IHD, DM, HFailure	+HEIGHT
<b>Meta-Analysis Observational estimate</b>	<b>1.05 (1.04-1.06)</b>	<b>1.05 (1.04-1.06)</b>	<b>1.04 (1.03-1.05)</b>	<b>1.04 (1.03-1.05)</b>
Test for overall effect Heterogeneity [I <sup>2</sup> , Qp]	p<0.001 [24%, 0.37]	p<0.001 [47.5%, 0.10]	p<0.001 [5.1%, 0.68]	p<0.001 [0%, 0.78]



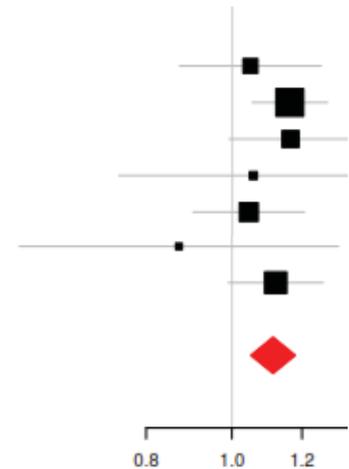
# Association between AF and BMI genes

## BMI Gene Score

Study	Sample Size	Cases	HR (95% CI)
AGES	2953	422	1.05 (0.87–1.26)
ARIC	9276	1373	1.16 (1.05–1.28)
FHS	7509	555	1.16 (0.99–1.37)
PREVEND	3515	113	1.06 (0.74–1.50)
RS-I	5729	693	1.04 (0.90–1.21)
RS-II	2087	80	0.87 (0.57–1.32)
WGHS	20577	942	1.12 (0.99–1.27)
<b>Summary, per 1 unit <math>\Delta</math> Gene Score</b>	<b>51646</b>	<b>4178</b>	<b>1.11 (1.05–1.18)</b>
<b>Summary, per 1 STDEV <math>\Delta</math> Gene Score</b>			<b>1.06 (1.03–1.09)</b>

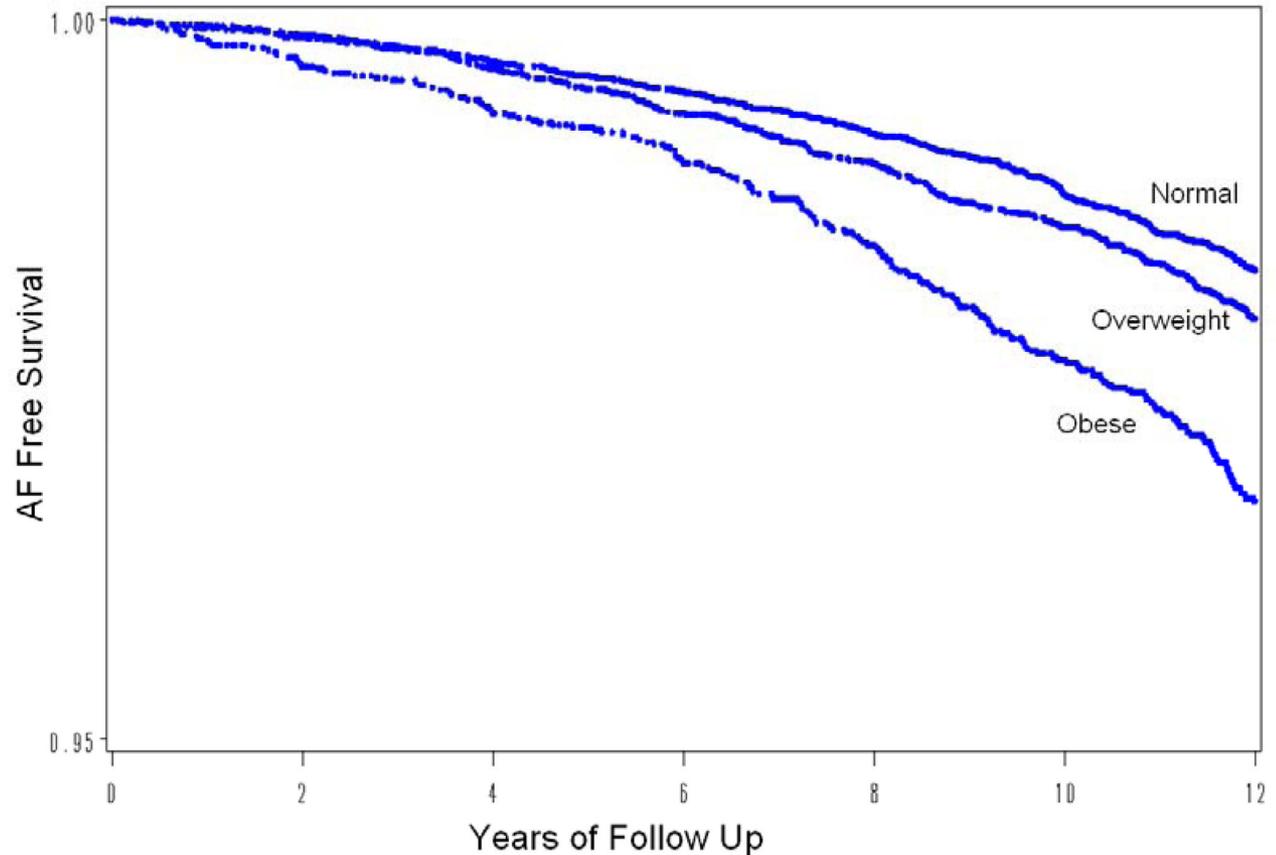
Test for Overall Effect:  $p < 0.001$

Test for Heterogeneity:  $I^2 = 0\%$  ( $Q_p = 0.73$ )



# Obesity and AF

- Womens health study - 34,309 participants with 834 AF events

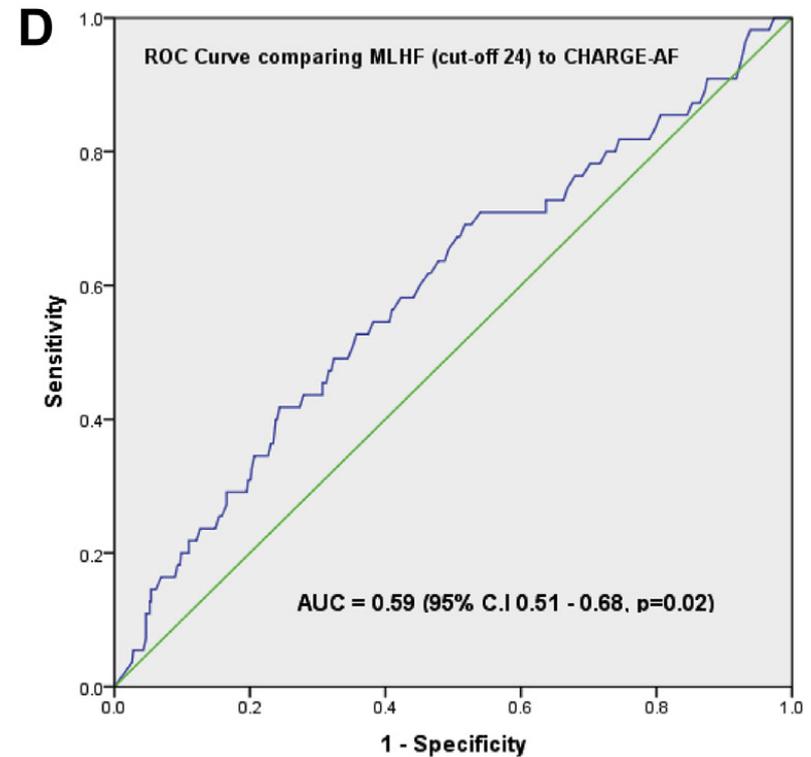
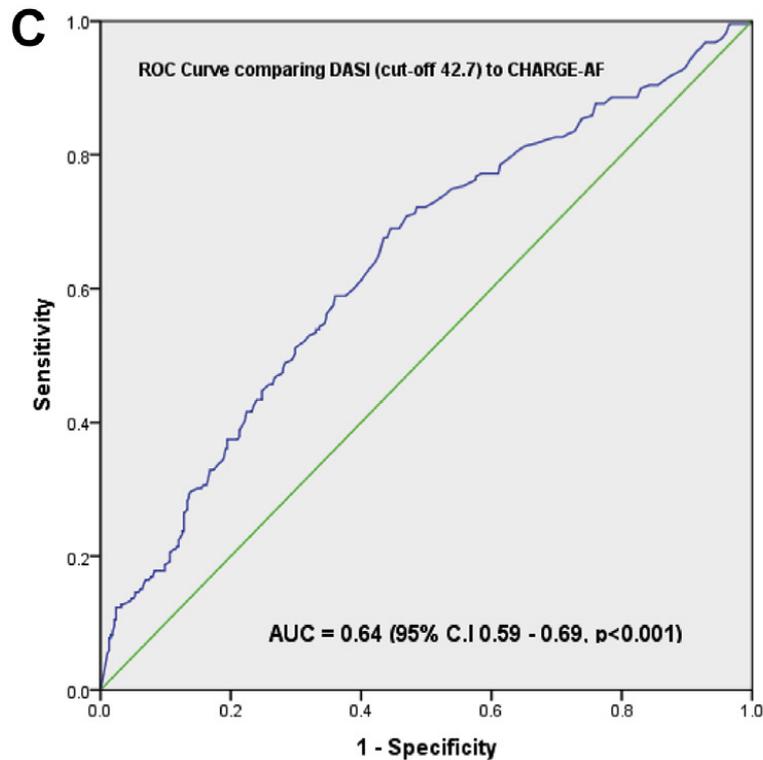


# Low activity and AF

- 607 pts with no AF history but  $>1$  risk factor for AF
- FU $>6$  months
- 6 MWT and Duke activity status index (DASI)



# Low activity and AF

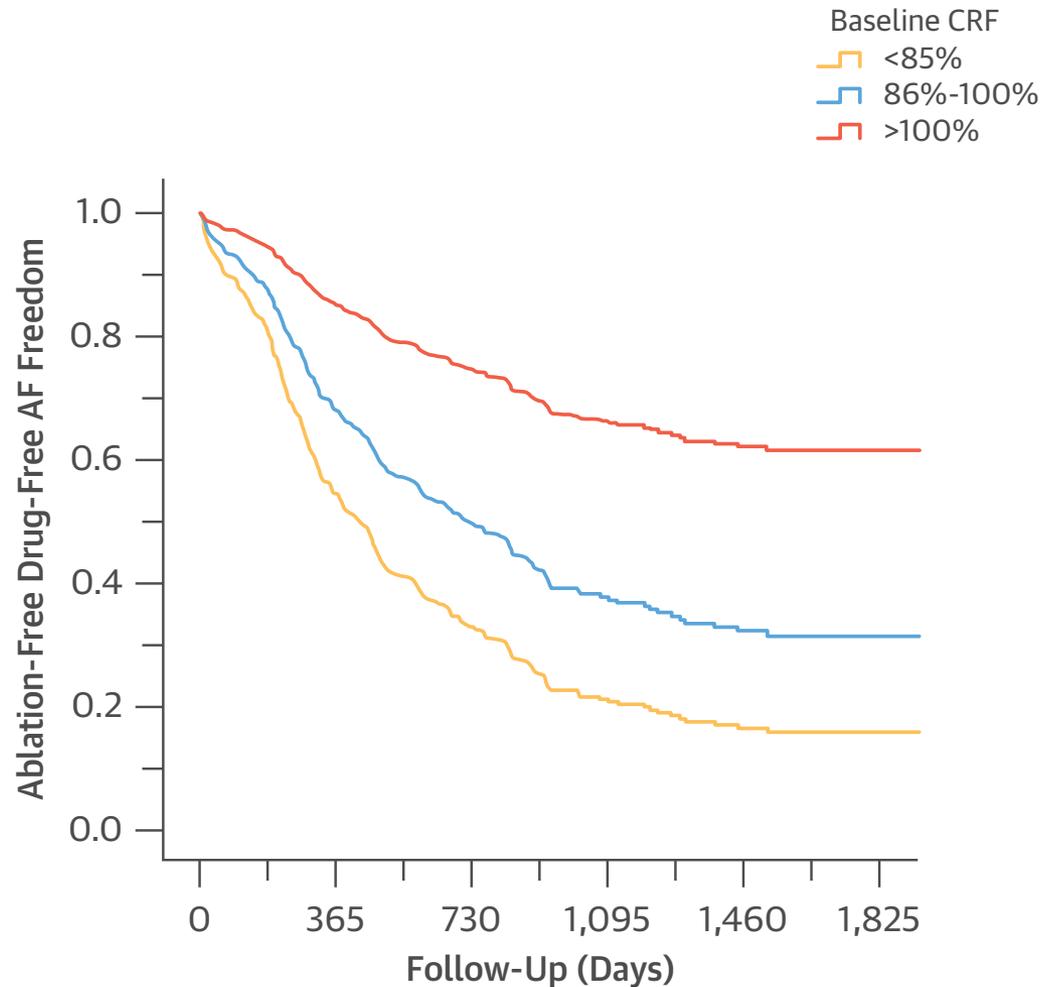


# Alcohol and AF

Alcohol Drinking Status*	Number of Cases	Person-Yrs	Age- and Sex-Adjusted RR (95% CI)	Multivariable RR (95% CI)†	Multivariable RR (95% CI)†‡
Never	820	66,101	1.02 (0.93-1.12)	1.03 (0.94-1.12)	1.07 (0.97-1.18)
Past	406	36,765	1.02 (0.91-1.14)	0.96 (0.85-1.08)	1.01 (0.89-1.16)
Current, drinks/week§					
<1 (0.4)	1,232	132,869	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (4.6)	2,909	381,029	0.99 (0.92-1.06)	1.01 (0.94-1.09)	1.06 (0.98-1.15)
7-14 (10.0)	1,162	158,611	1.05 (0.96-1.14)	1.07 (0.98-1.17)	1.12 (1.02-1.23)
15-21 (16.6)	381	48,969	1.15 (1.02-1.30)	1.14 (1.01-1.28)	1.18 (1.03-1.35)
>21 (28.4)	335	35,076	1.42 (1.25-1.62)	1.39 (1.22-1.58)	1.43 (1.25-1.65)
p for trend¶			<0.0001	<0.0001	<0.0001
Liquor, drinks/week					
<1 (0.1)	3,993	629,590	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.3)	1,603	188,686	1.08 (1.02-1.15)	1.04 (0.98-1.10)	1.05 (0.98-1.12)
7-14 (8.8)	314	32,352	1.25 (1.11-1.41)	1.13 (1.01-1.28)	1.14 (1.00-1.30)
>14 (18.8)	109	8,792	1.69 (1.39-2.05)	1.43 (1.14-1.74)	1.46 (1.18-1.81)
p for trend¶			<0.0001	0.0002	0.0002
Wine, drinks/week					
<1 (0.2)	3,465	484,708	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.6)	2,128	319,913	0.99 (0.93-1.04)	1.01 (0.96-1.07)	1.02 (0.96-1.09)
7-14 (8.6)	331	45,248	1.11 (0.99-1.24)	1.09 (0.97-1.23)	1.07 (0.94-1.21)
>14 (18.6)	95	9,551	1.37 (1.11-1.68)	1.30 (1.06-1.61)	1.35 (1.08-1.68)
p for trend			0.003	0.009	0.01
Beer, drinks/week					
<1 (0.1)	2,954	443,987	1.00 (reference)	1.00 (reference)	1.00 (reference)
1-6 (2.7)	2,196	303,557	0.95 (0.90-1.01)	0.96 (0.91-1.02)	1.00 (0.93-1.06)
7-14 (9.1)	584	72,041	1.09 (0.99-1.20)	1.07 (0.98-1.12)	1.11 (1.00-1.23)
>14 (21.2)	285	39,835	1.12 (0.98-1.27)	1.06 (0.93-1.23)	1.03 (0.87-1.19)
p for trend¶			0.02	0.14	0.28

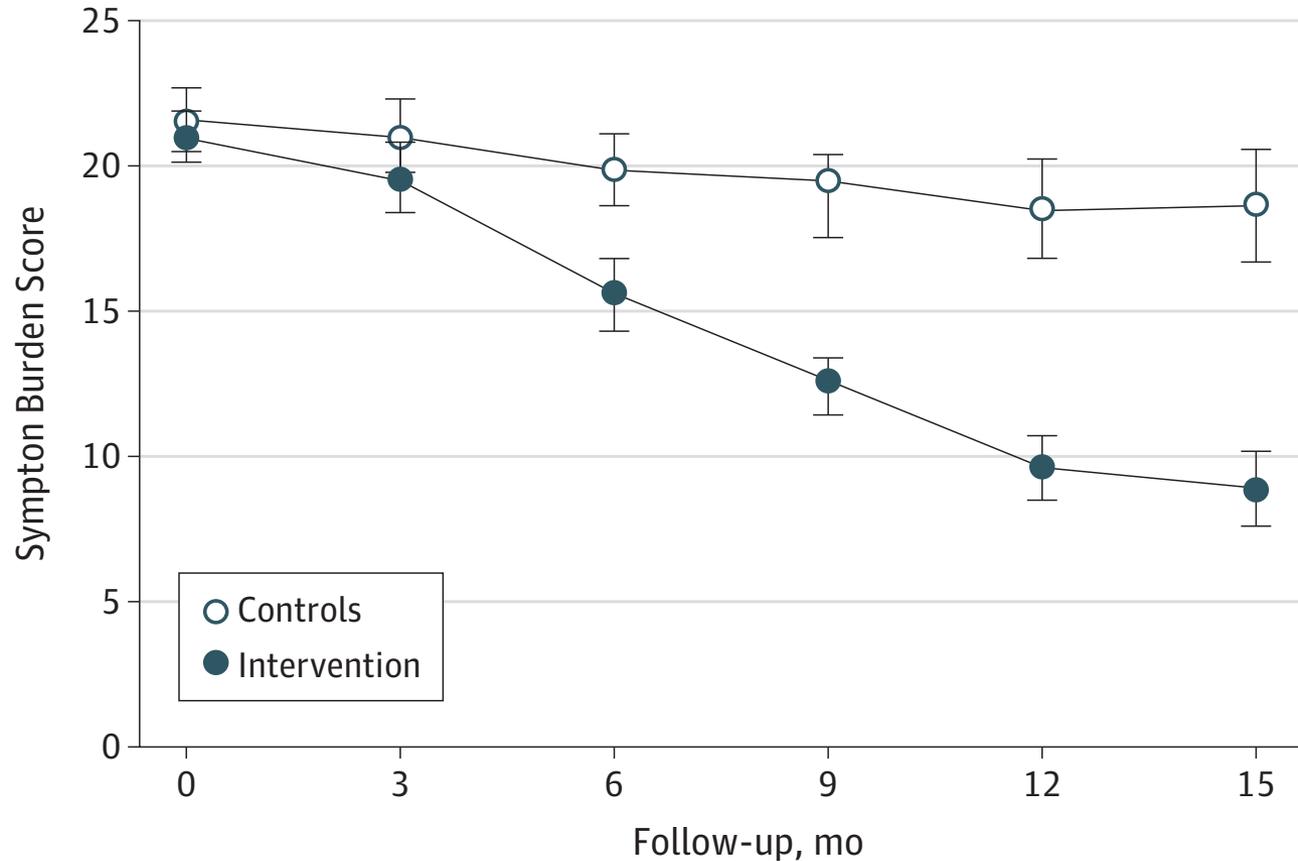


# Risk of AF and baseline fitness

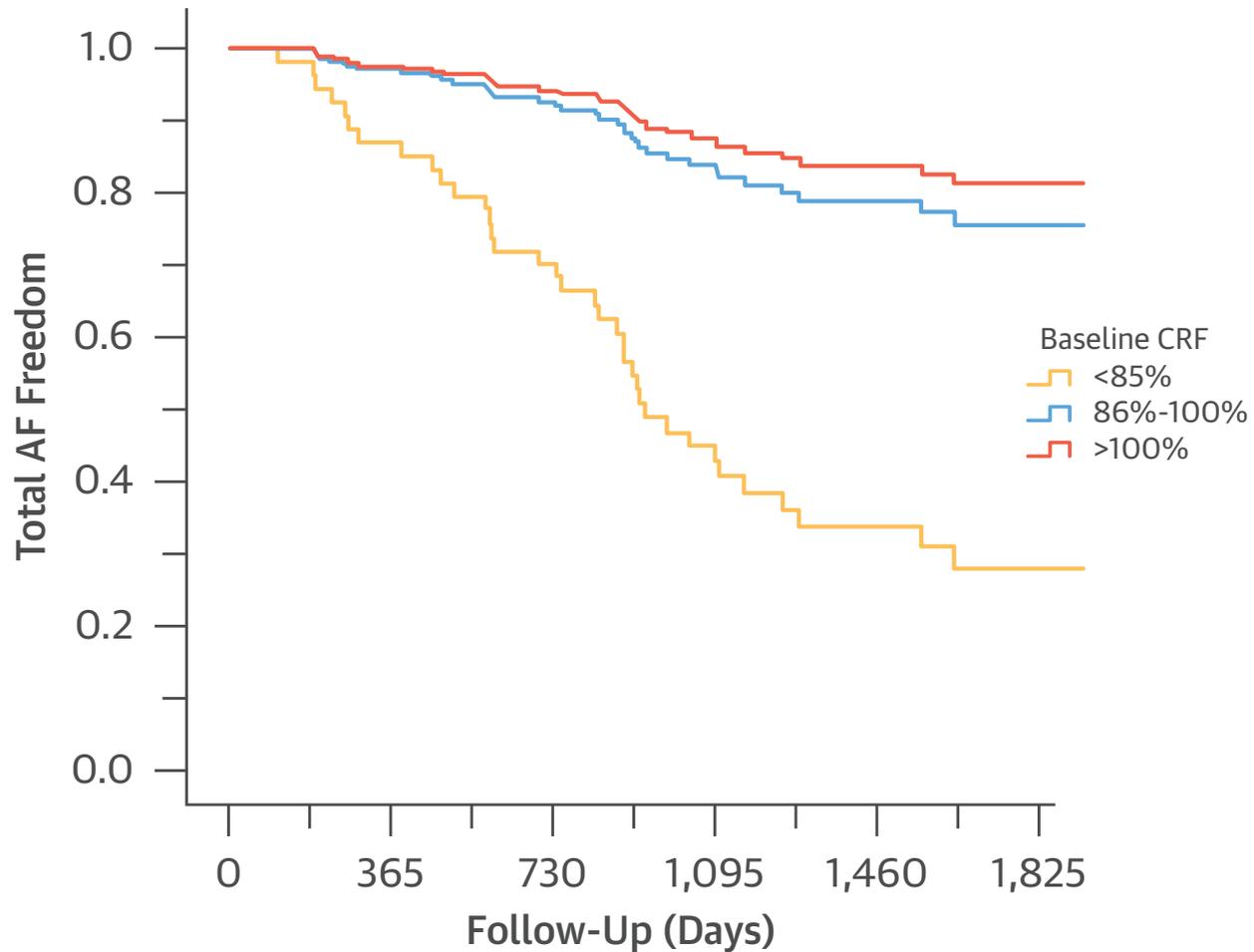


# Effect of intervention on AF

- 178 pts BMI >27 randomised to intervention vs control

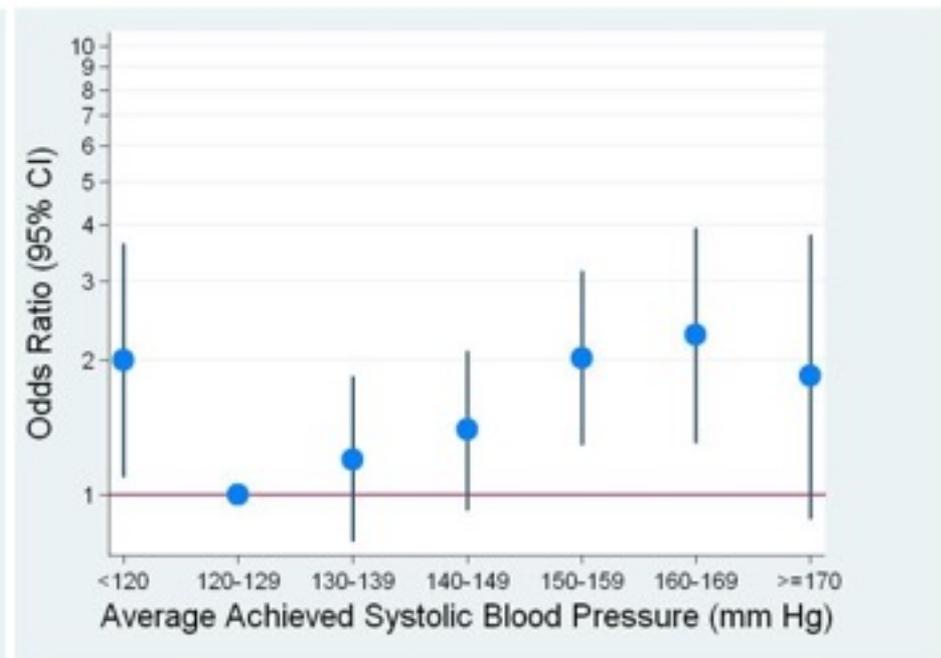
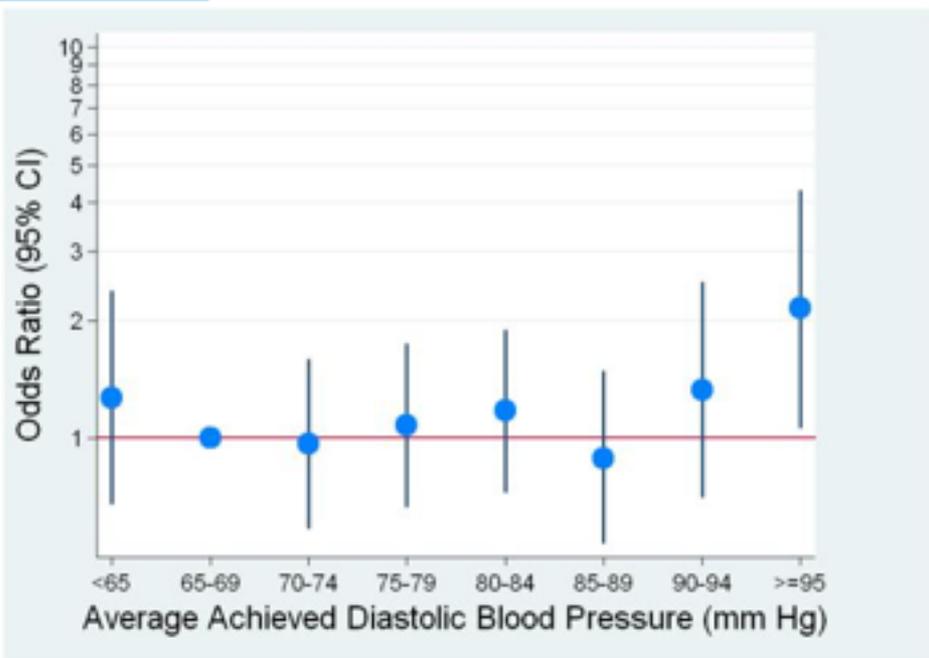


# Impact of fitness program on AF



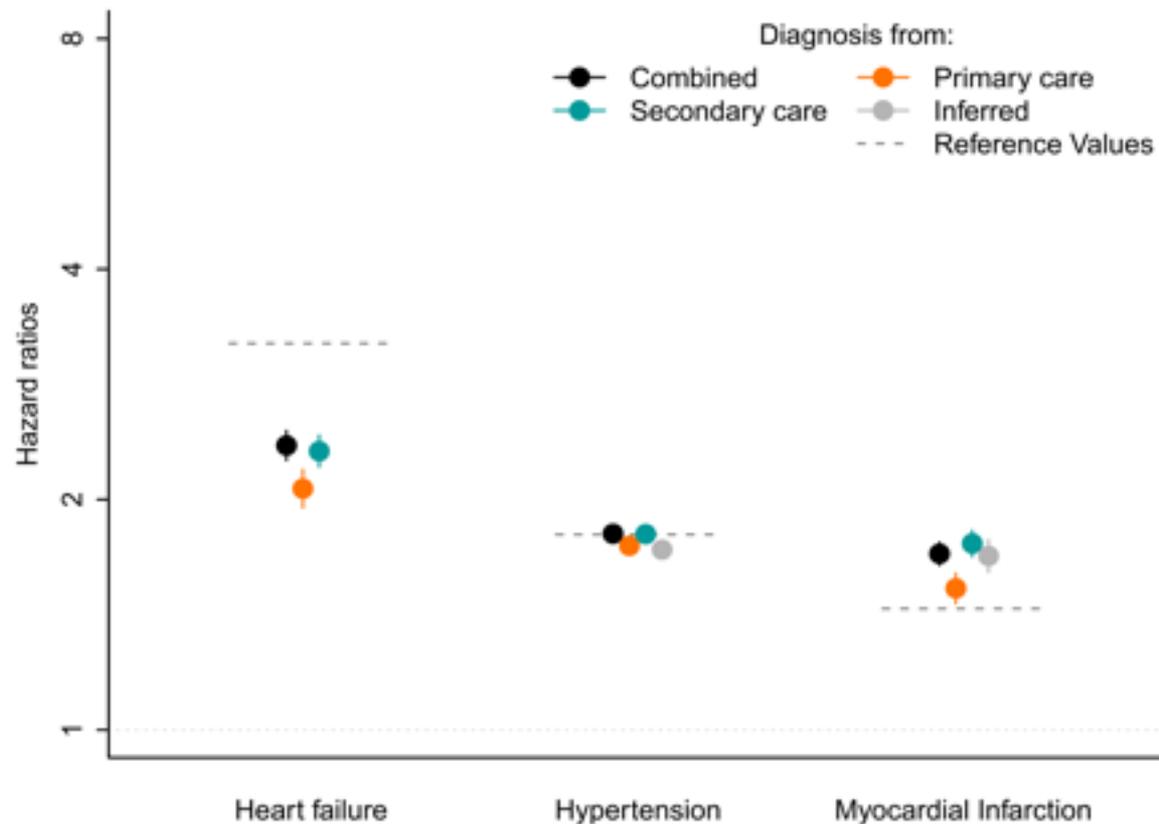
# Association of BP and AF

- Pts with new onset AF from group health database

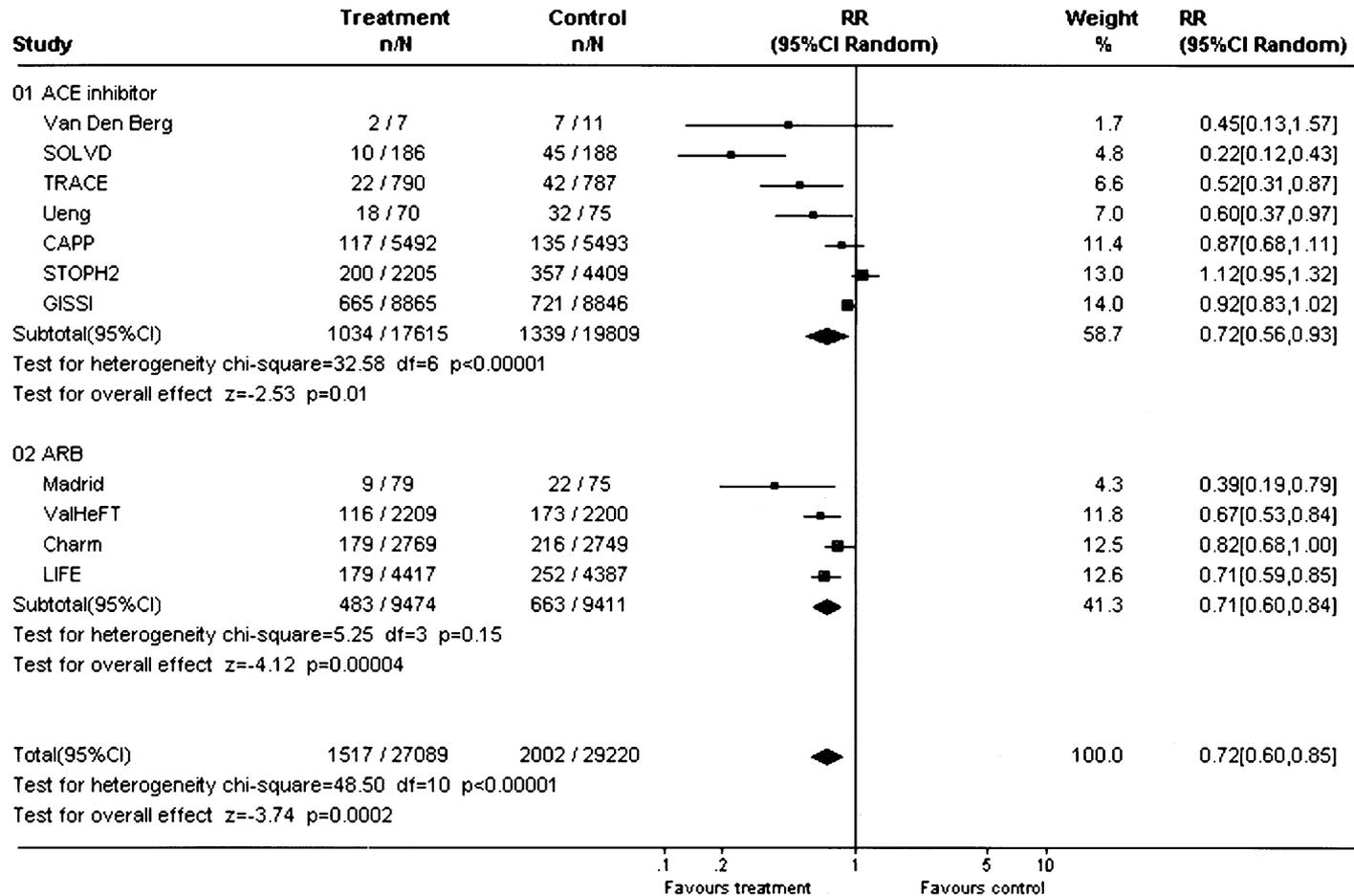


# Risk factors for incident AF

- 1998 to 2010 of 2.14 million UK patients aged >30 years



# Renin-angiotensin blockers

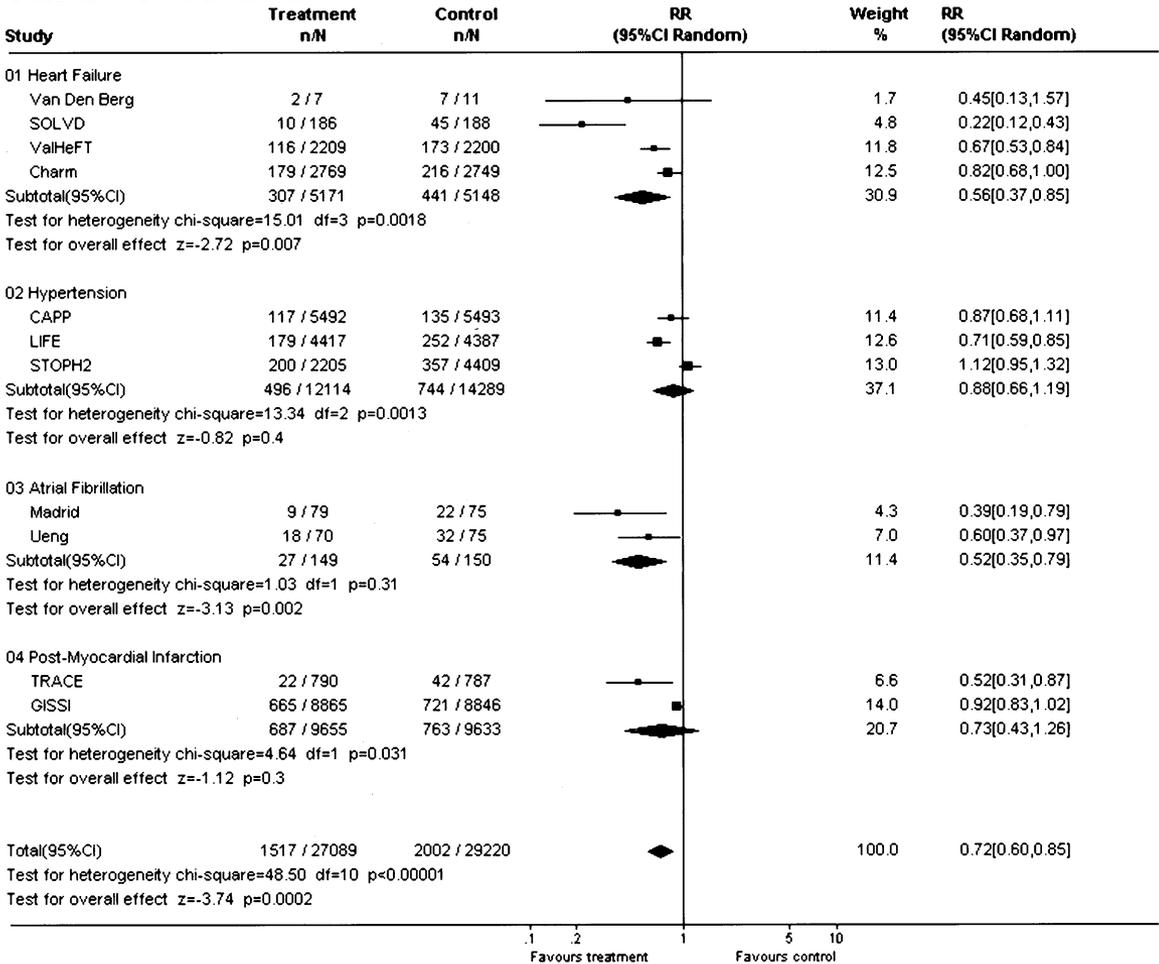


# Renin-angiotensin blockers

Impact for ARBs is primarily in heart failure not hypertension

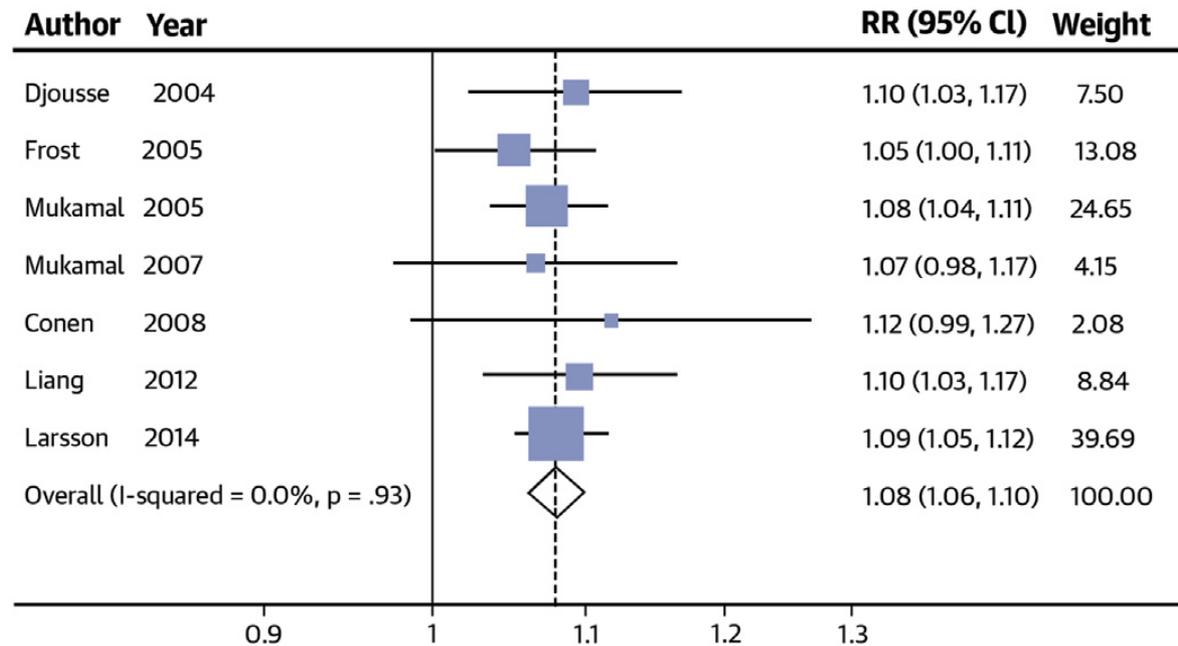
Comparison: 02 Effect of ACE inhibitors or ARB based on indication

Outcome: 01 Atrial Fibrillation



# Alcohol and AF

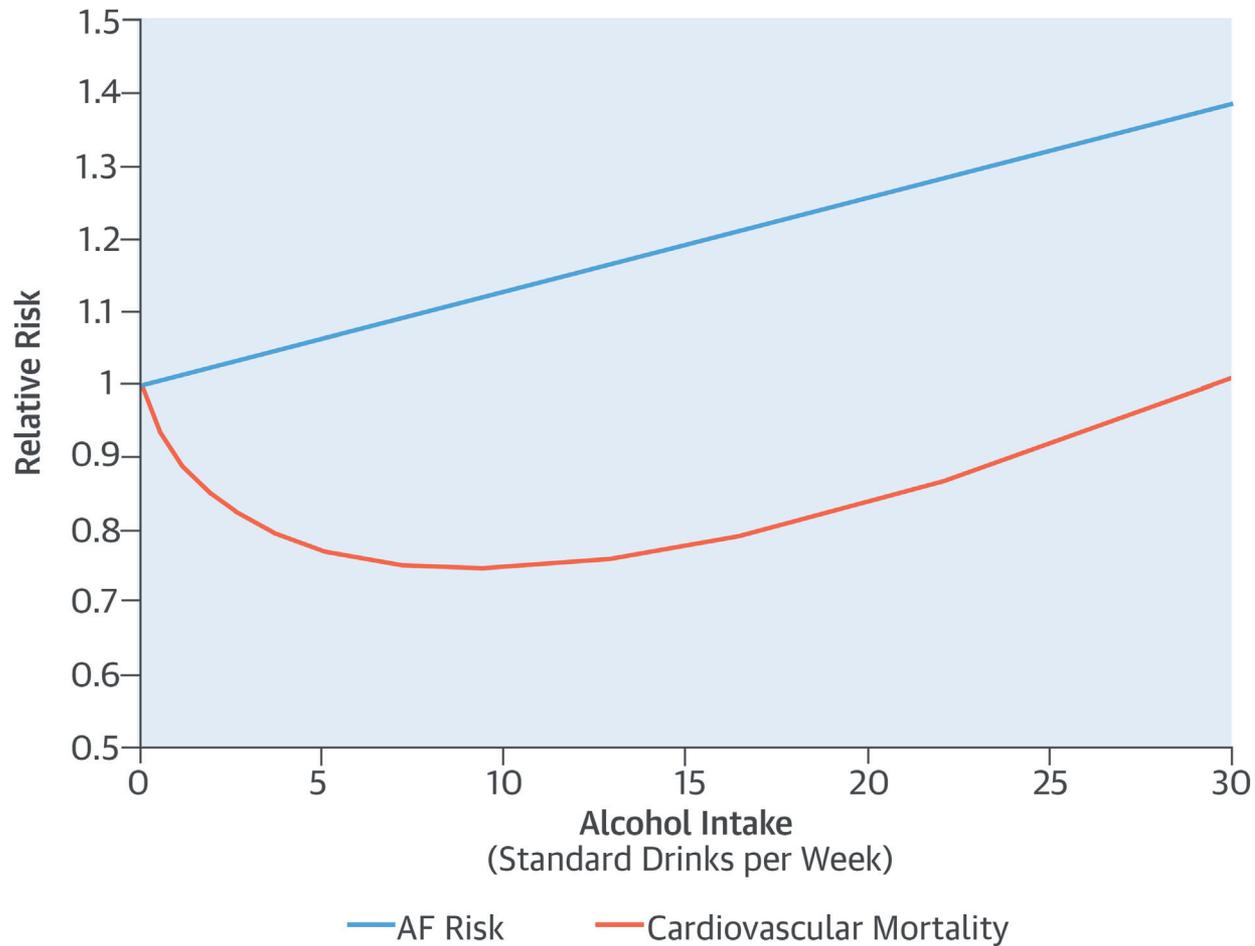
- Meta analysis of alcohol vs AF studies



**CENTRAL ILLUSTRATION** Forest Plot of Relative Risks of Atrial Fibrillation Per 1 Drink/Day Increment in Alcohol Consumption

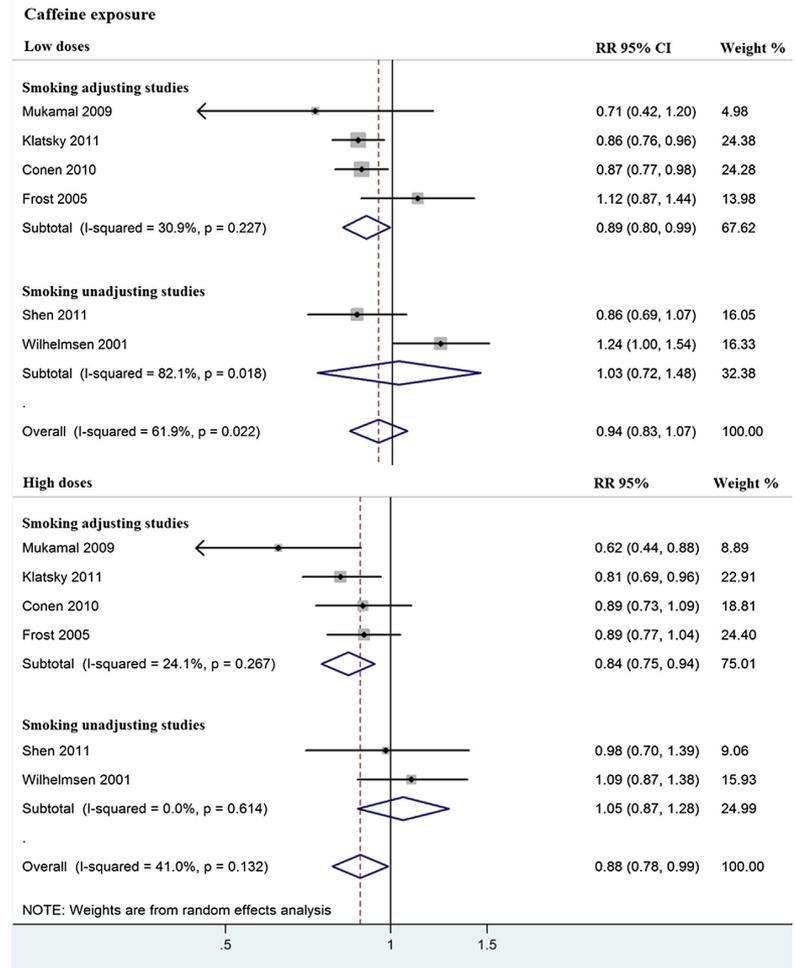


# Alcohol and AF



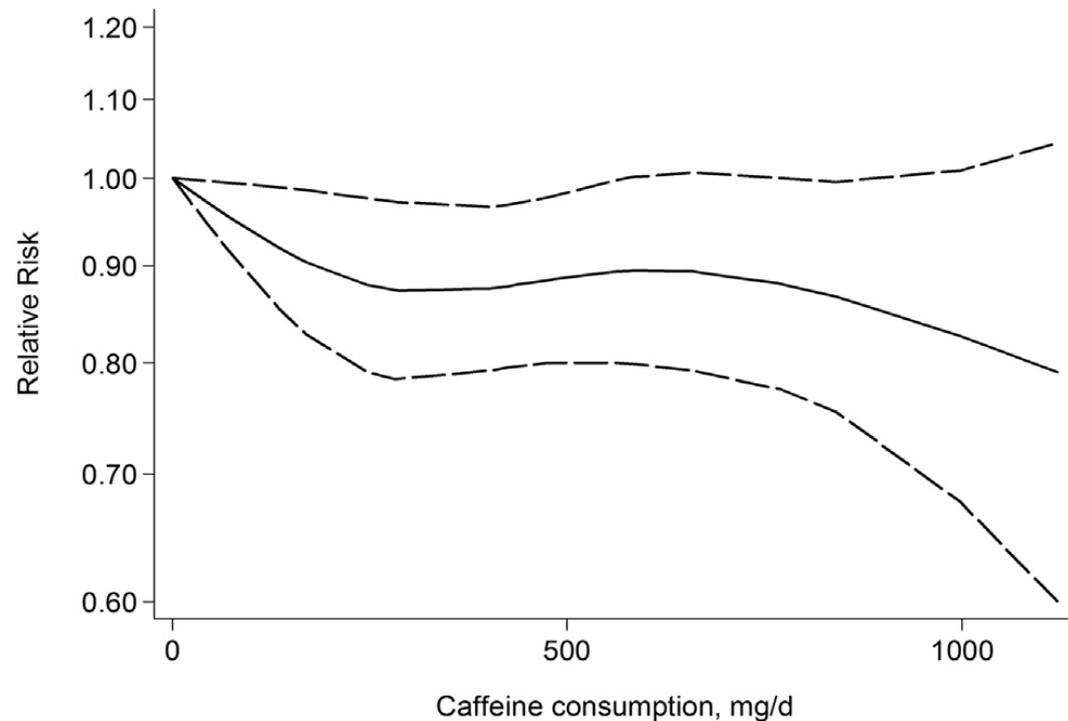
# Caffeine and AF

- Meta analysis 6 studies, 228,465 pts



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- Meta analysis 6 studies, 228,465 pts



# Conclusions

- A partnership with patient
  - empowerment and control
- Cost efficacy of risk reduction programs not yet available

