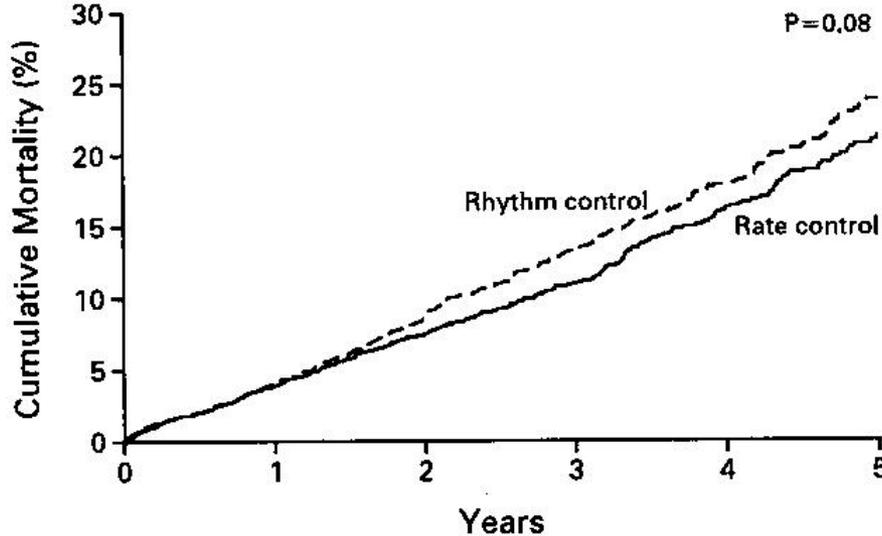


# Plaats van PVI in de behandeling van VKF

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## Het verhaal van CABANA begint in 2002 met de AFFIRM studie



- Gerandomiseerde, prospectieve studie
- 4060 patienten
- Leeftijd >65 year
- 1 andere RF voor CVA
- FU gemiddelde 3,5jaar.

No. OF DEATHS		number (percent)				
Rhythm control	0	80 (4)	175 (9)	257 (13)	314 (18)	352 (24)
Rate control	0	78 (4)	148 (7)	210 (11)	275 (16)	306 (21)

'Ritme' controle strategie geen betere overleving noch minder kans op beroerte, bloeding of cardiaal arrest noch op levenskwaliteit of functionele status, functional status

Is het wel zo belangrijk om te trachten het sinusritme te behouden?

# Relationships Between Sinus Rhythm, Treatment, and Survival in the Atrial Fibrillation Follow-Up Investigation of Rhythm Management (AFFIRM) Study

The AFFIRM Investigators\*

*In this analysis, the presence of sinus rhythm was associated with a considerable reduction in the risk of death."*

*Currently available AADs are not associated with improved survival, which suggests that any beneficial effect of AAD are offset by their adverse effects."*

Dus het is het sinusritme dat prognose bepaalt en het onsuccesvol bereiken of behoud van sinusritme met anti-aritmische medicatie is de limitatie van de studie.

Als er een meer efficiënte methode zou bestaan om het sinusritme te behouden met minder neveneffecten zou dit harde eindpunten wel positief kunnen beïnvloeden....

# CABANA studie

- Investigator-initiated, multicenter, gerandomiseerde studie (126 centra in 10 landen, november 2009-april 2016)
- 2204 AF patiënten (>65j, <65j +  $\geq 1$  CVA RF)
- Randomisatie in 2 groepen: ablatie-groep (N=1108) en medicatie-groep (N=1096)
- Primaire eindpunt: gemengd eindpunt van overlijden, CVA, bloeding of hartstilstand

# Hoofdvraag van CABANA

Slaagt ablatie wel in dit opzet?

De verwachting met ablatie minder AF, dus minder beroertes en betere overleving

# Mooie balans in baseline karakteristieken, hoge burden van co-morbiditeiten

Middelheim (N=1000)

Baseline Characteristic	No. (%)	
	Catheter Ablation (n = 1108)	Drug Therapy (n = 1096)
<b>Patients</b>		
Age, median (Q1, Q3), y	68 (62, 72)	67 (62, 72)
<65	375 (33.8)	391 (35.7)
65-<75	577 (52.1)	553 (50.5)
≥75	156 (14.1)	152 (13.9)
<b>Sex</b>		
Male	695 (62.7)	690 (63.0)
Female	413 (37.3)	406 (37.0)
<b>Medical history</b>		
Hypertension or LVH	924 (83.4)	927 (84.7)
Hypertension	876 (79.1)	900 (82.2)
LVH	334 (38.7)	328 (42.1)
Diabetes	280 (25.3)	281 (25.7)
Sleep apnea	262 (23.6)	246 (22.5)
Coronary artery disease	208 (18.8)	216 (19.7)
Heart failure	174 (15.7)	163 (14.9)
Family history of AF	130 (11.8)	122 (11.2)
Prior CVA or TIA	117 (10.6)	103 (9.4)
<b>Type of AF at enrollment<sup>g</sup></b>		
Persistent	524 (47.3)	518 (47.3)
Paroxysmal	470 (42.4)	476 (43.5)
Long-standing persistent	114 (10.3)	101 (9.2)
<b>CHA<sub>2</sub>DS<sub>2</sub>-VASc<sup>f</sup></b>		
Median (Q1, Q3)	3.0 (2.0, 4.0)	3.0 (2.0, 4.0)
<b>Rhythm control therapy<sup>h</sup></b>		
1 Rhythm control drug	398 (81.6)	452 (82.2)
≥2 Rhythm control drugs	90 (18.4)	98 (17.8)

60 ± 10

42,3%

41,0%

58,5%

0,7%

1±1

**2204** Randomized<sup>a</sup>

**1108** Randomized to catheter ablation  
**1006** Received catheter ablation  
**102** Did not receive catheter ablation  
    **84** Patient or family refusal  
    **14** Physician discretion  
    **4** Insurance issues  
**215** Received repeat ablation(s)<sup>b</sup>

**1002** Completed the study  
**79** Withdrew consent <3 y  
**27** Lost to follow-up

**1108** Included in the primary analysis<sup>c</sup>

**1096** Randomized to drug therapy  
**1092** Received drug therapy  
**853** Received rhythm and rate control  
**123** Received rate control only  
**116** Received rhythm control only  
**4** Did not receive drug therapy  
    **3** Withdrew consent  
    **1** Physician decided not to prescribe  
**301** Received catheter ablation

**966** Completed the study  
**112** Withdrew consent <3 y  
**18** Lost to follow-up

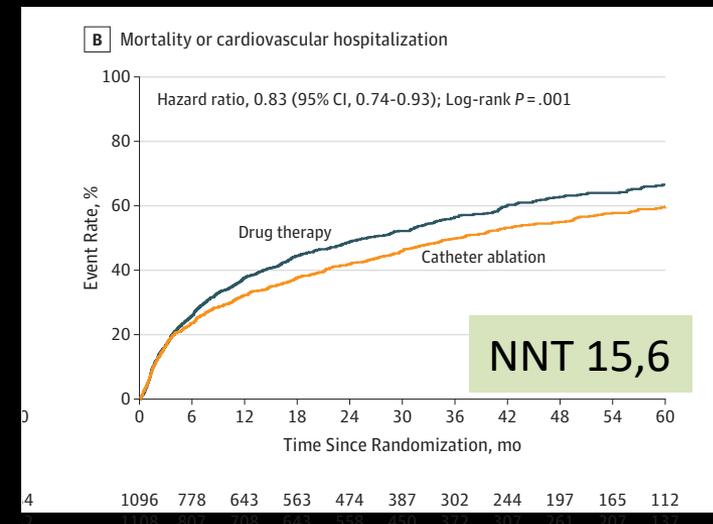
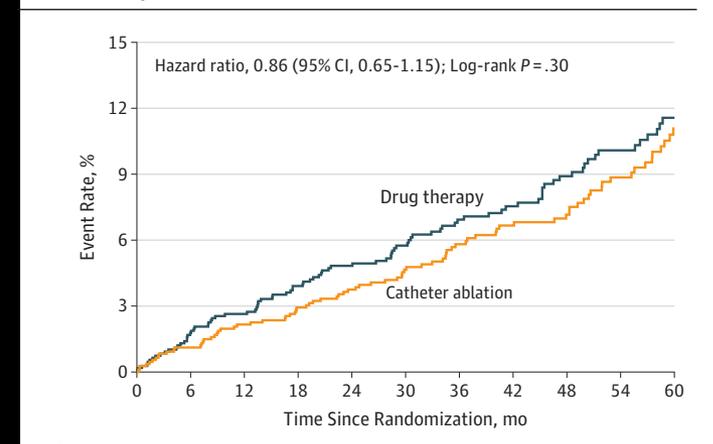
**1096** Included in the primary analysis<sup>c</sup>

## De meest pure wetenschappelijke benadering: ITT analyse

Wel numeriek minder events doch geen significant verschil in primair eindpunt, wel in secundair eindpunt

	Events, No. (%)		P Value
	Catheter Ablation Group (n = 1108)	Drug Therapy Group (n = 1096)	
Primary end point (death, disabling stroke, serious bleeding, or cardiac arrest) <sup>b</sup>	89 (8.0)	101 (9.2)	.30
<b>Components of primary end point</b>			
Death	58 (5.2)	67 (6.1)	.38
Disabling stroke	3 (0.3)	7 (0.6)	.19
Serious bleeding	36 (3.2)	36 (3.3)	.93
Cardiac arrest	7 (0.6)	11 (1.0)	.33
<b>Secondary end point</b>			
Death or cardiovascular hospitalization	573 (51.7)	637 (58.1)	.001

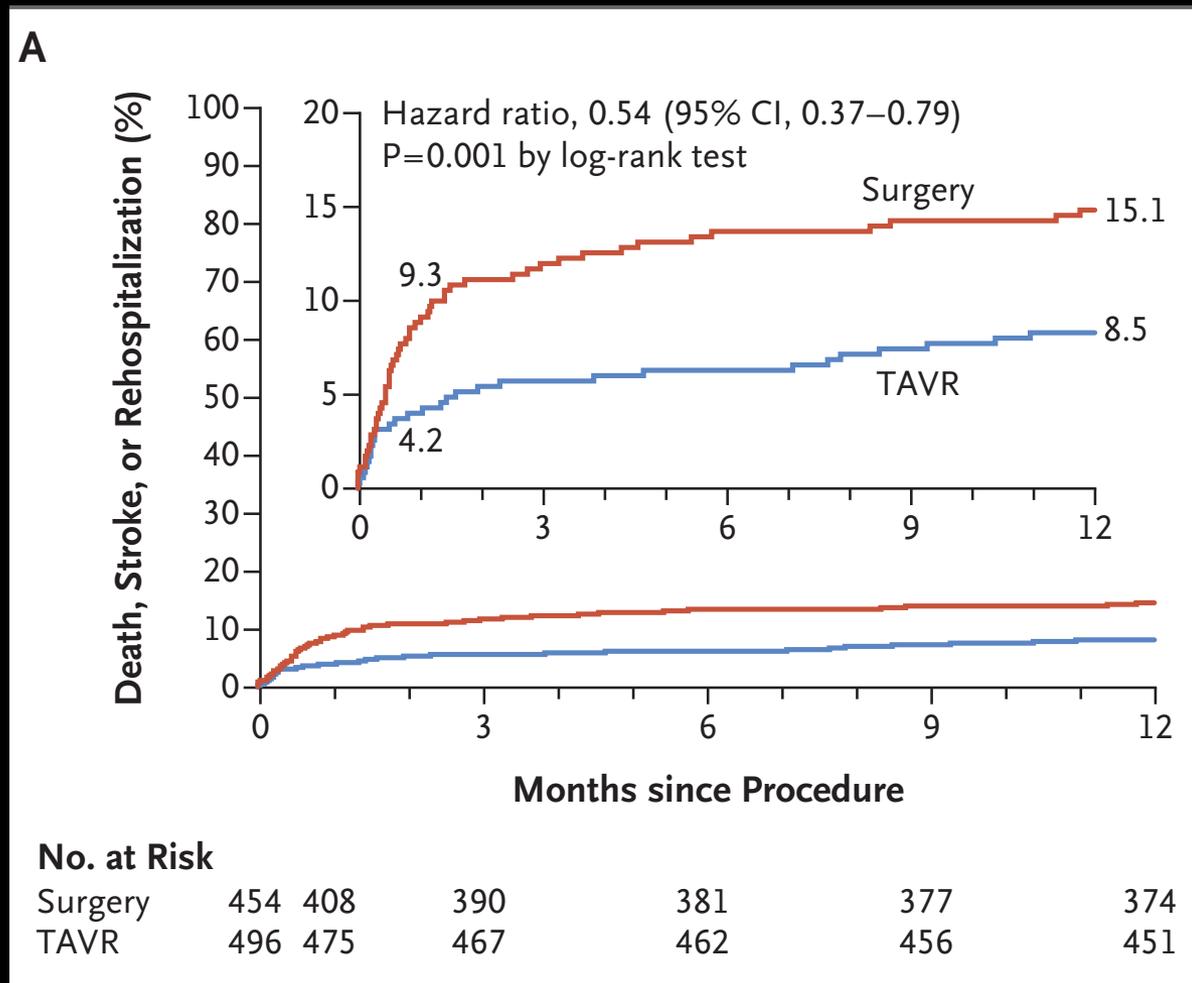
Figure 2. Kaplan-Meier Estimates of the Incidence of the Primary End Point



Imagine een keertje....

# Primaire (samengesteld) eindpunt in PARTNER 3 studie TAVI versus Heelkunde in laag risico patiënten

## Overlijden, CVA en re-hospitalisatie na 1jaar



Transcatheter Aortic-Valve Replacement with a Balloon- Expandable Valve in Low-Risk Patients. M.J. Mack et al. NEJM

# Meer pragmatische standpunt: ‘treatment-received’ analyse of per-protocol analyse “je kan enkel een voordeel hebben door ablatie als je er een gehad hebt”

## “Treatment-received”

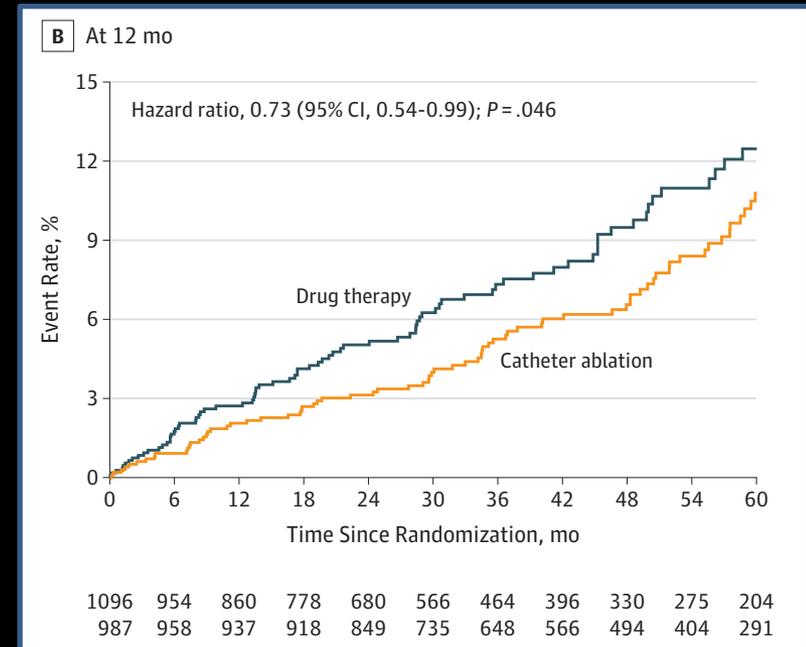
Using a treatment received analysis, the primary endpoint was 7% and 10.9% in the ablation and drug groups, respectively (p=0.006).

↓ Combined primary endpoint: HR 0.67, 95% CI 0.50- 0.89, p=0.006

All-cause mortality: HR 0.60, 95% CI 0.42-0.86; p=0.005, NNT 32.3

↓ All-cause mortality and cardiovascular hospitalization: HR 0.83, 95% CI, 0.74-0.94; p=0.002, NNT 3.0

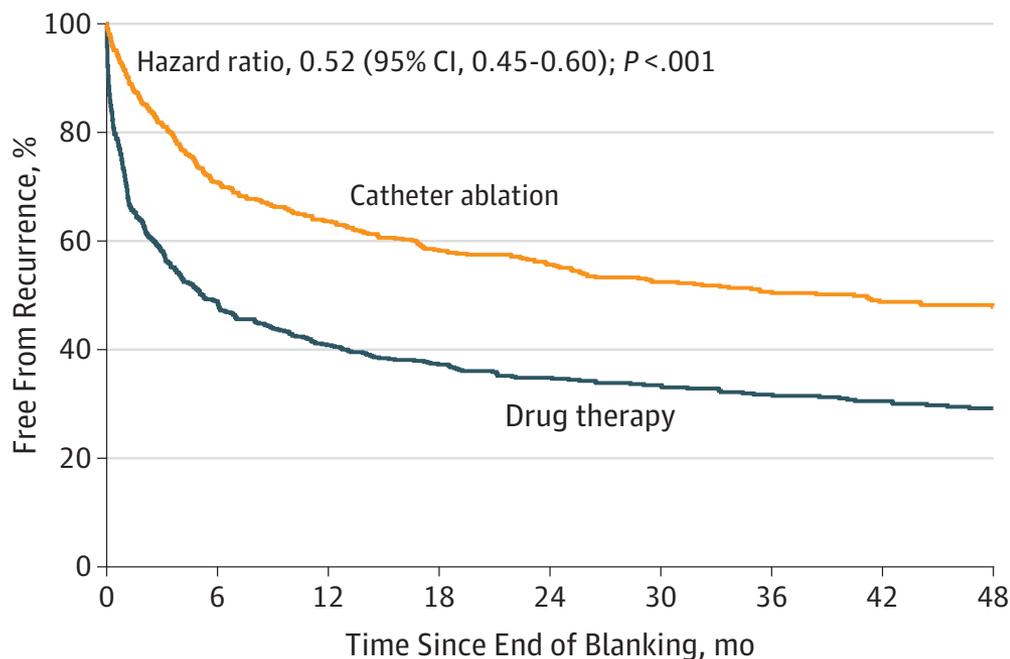
## “Per-protocol analyse”



Behoud randomisatie  
Exclusie cross over patienten

# “First we had belief, now we have evidence”

Figure 6. Recurrent Atrial Fibrillation After Blanking by Intention-to-Treat Analysis



No. at risk	0	6	12	18	24	30	36	42	48
Drug therapy	629	304	252	212	181	157	131	115	94
Catheter ablation	611	432	381	328	291	241	201	163	134

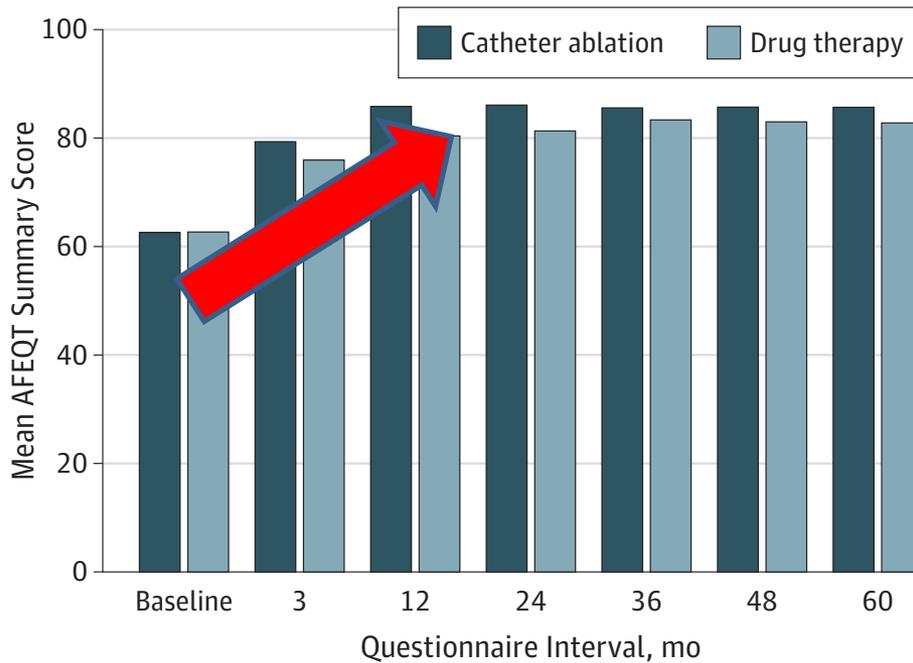
Treatment-naïve  
patienten

50% vs 69% at 3 years  
postblanking follow-up

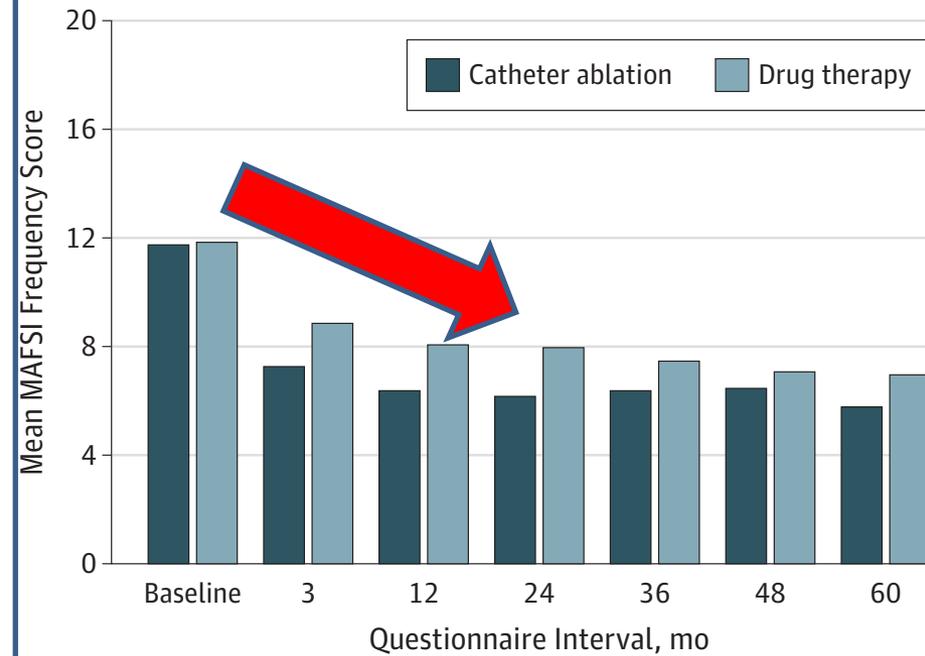
Laag complicatie-risico  
met ablatie

# Symptomen en levenskwaliteit beter na ablatie

A Mean AFEQT summary score



A Mean MAFSI frequency score

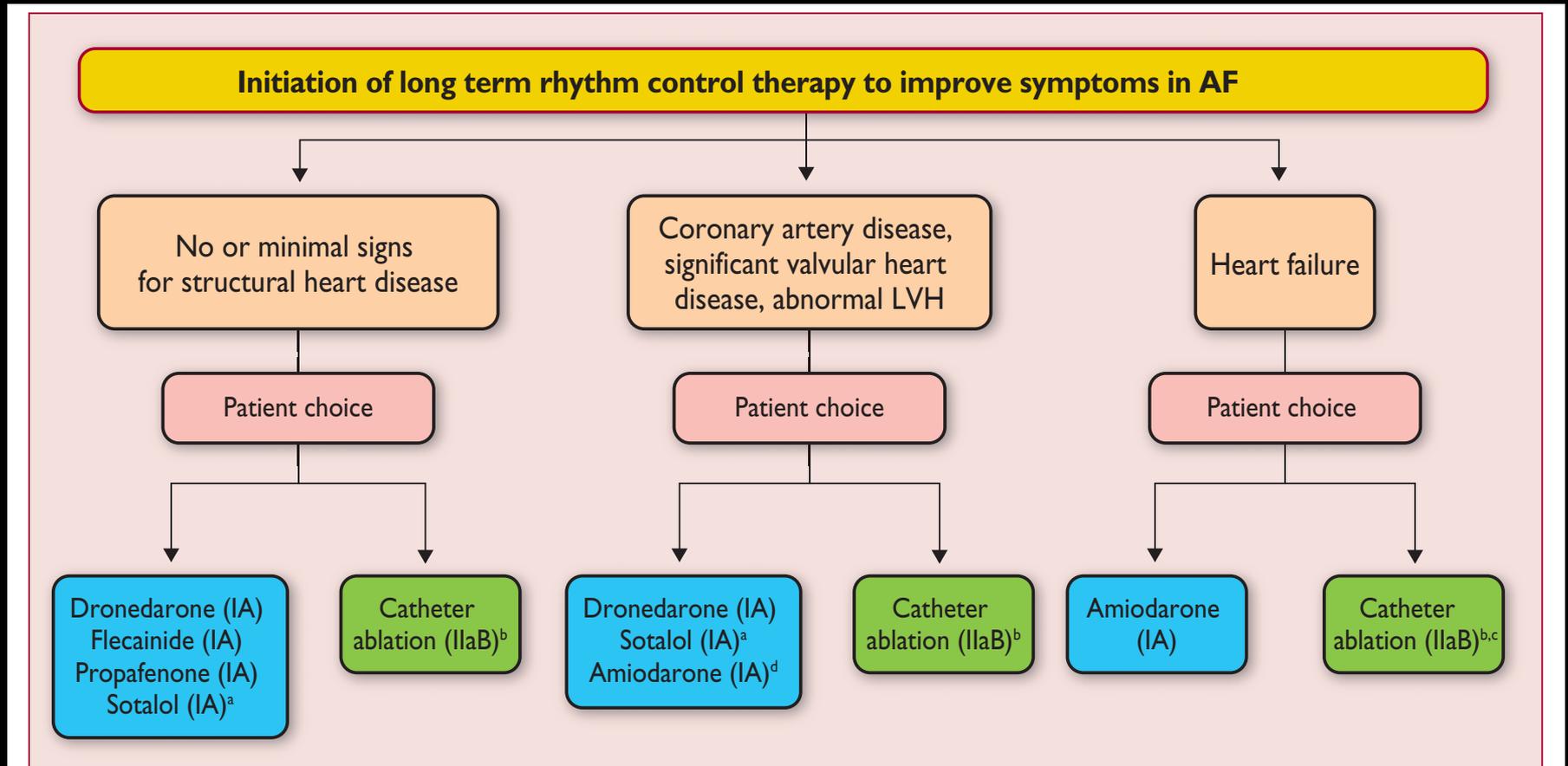


Symptomen  
Dagdagelijkse activiteiten  
Zorgen i.v.m. de behandeling

Symptoomfrequentie tijdens de laatste maand (0=nooit tot 4= altijd)

# Wie komt in aanmerking voor een PVI ?

Symptomatisch... eigenlijk iedere patiënt



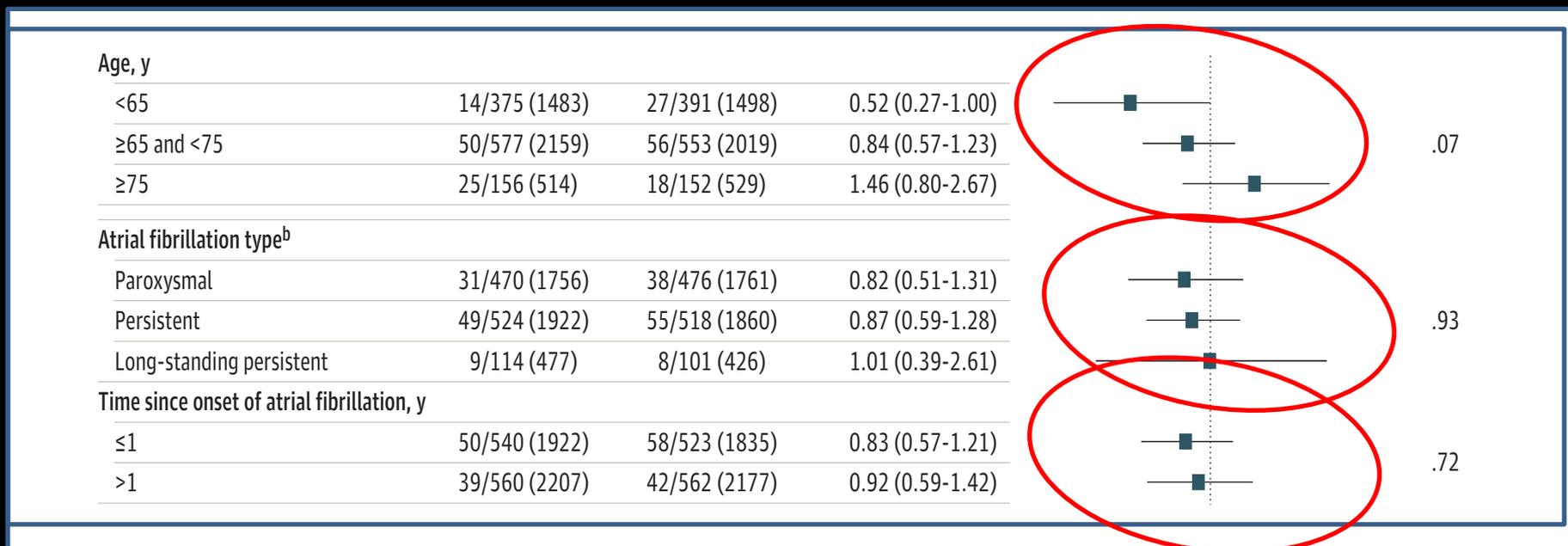
# Spectrum verder opengetrokken door HRS consensus

Klassieke leeftijd ablatie patienten is 60 ±10 jaar

Congestive heart failure	It is reasonable to use similar indications for AF ablation in selected patients with heart failure as in patients without heart failure	IIa
Older patients (>75 years of age)	It is reasonable to use similar indications for AF ablation in selected older patients with AF as in younger patients.	IIa
Hypertrophic cardiomyopathy	It is reasonable to use similar indications for AF ablation in selected patients with HCM as in patients without HCM.	IIa
Young patients (<45 years of age)	It is reasonable to use similar indications for AF ablation in young patients with AF (<45 years of age) as in older patients.	IIa
Tachy-brady syndrome	It is reasonable to offer AF ablation as an alternative to pacemaker implantation in patients with tachy-brady syndrome.	IIa
Athletes with AF	It is reasonable to offer high-level athletes AF as first-line therapy due to the negative effects of medications on athletic performance.	IIa
Asymptomatic AF**	Paroxysmal: Catheter ablation may be considered in select patients. **	IIb
	Persistent: Catheter ablation may be considered in select patients.	IIb

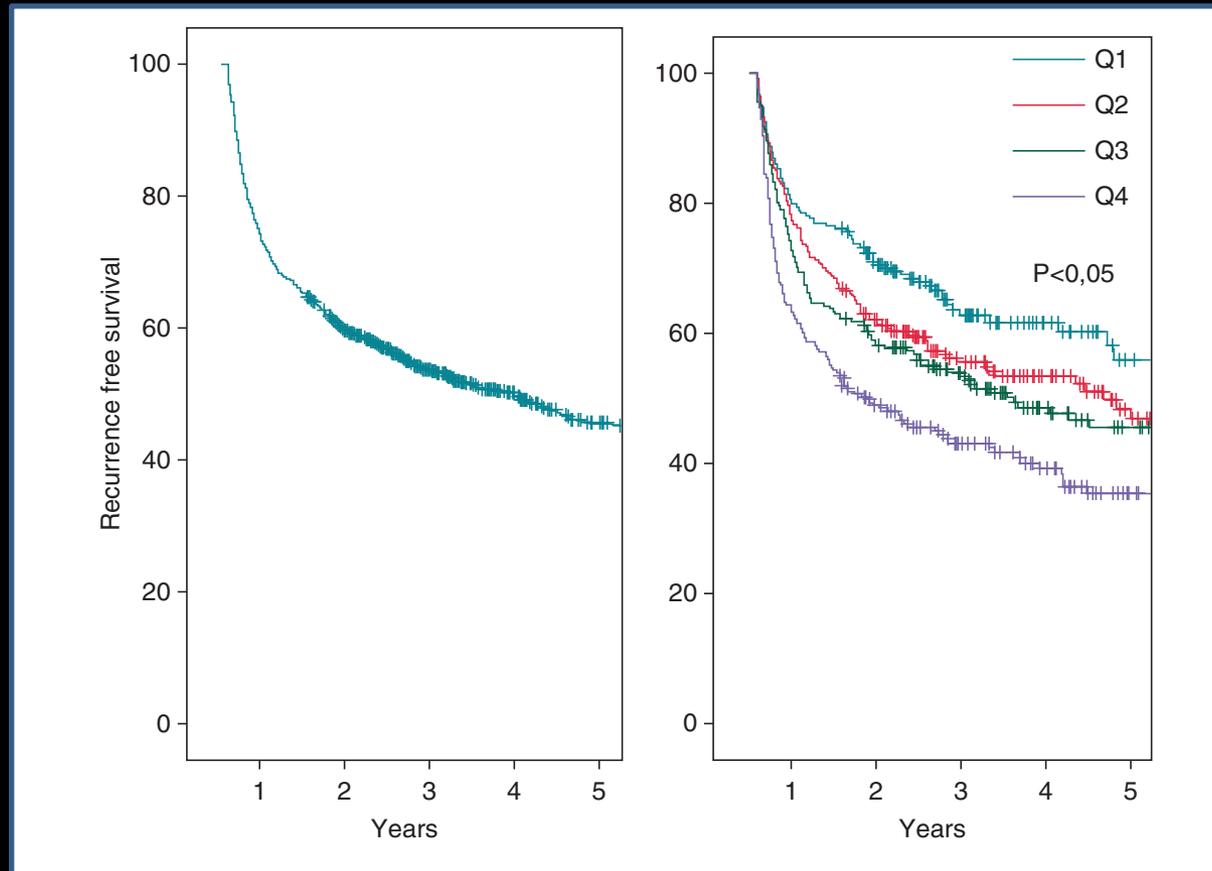
Toch enkele trends, doch ook niet meer dan trends (predictieve waarde blijft laag)

## Resultaat in bepaalde subgroepen



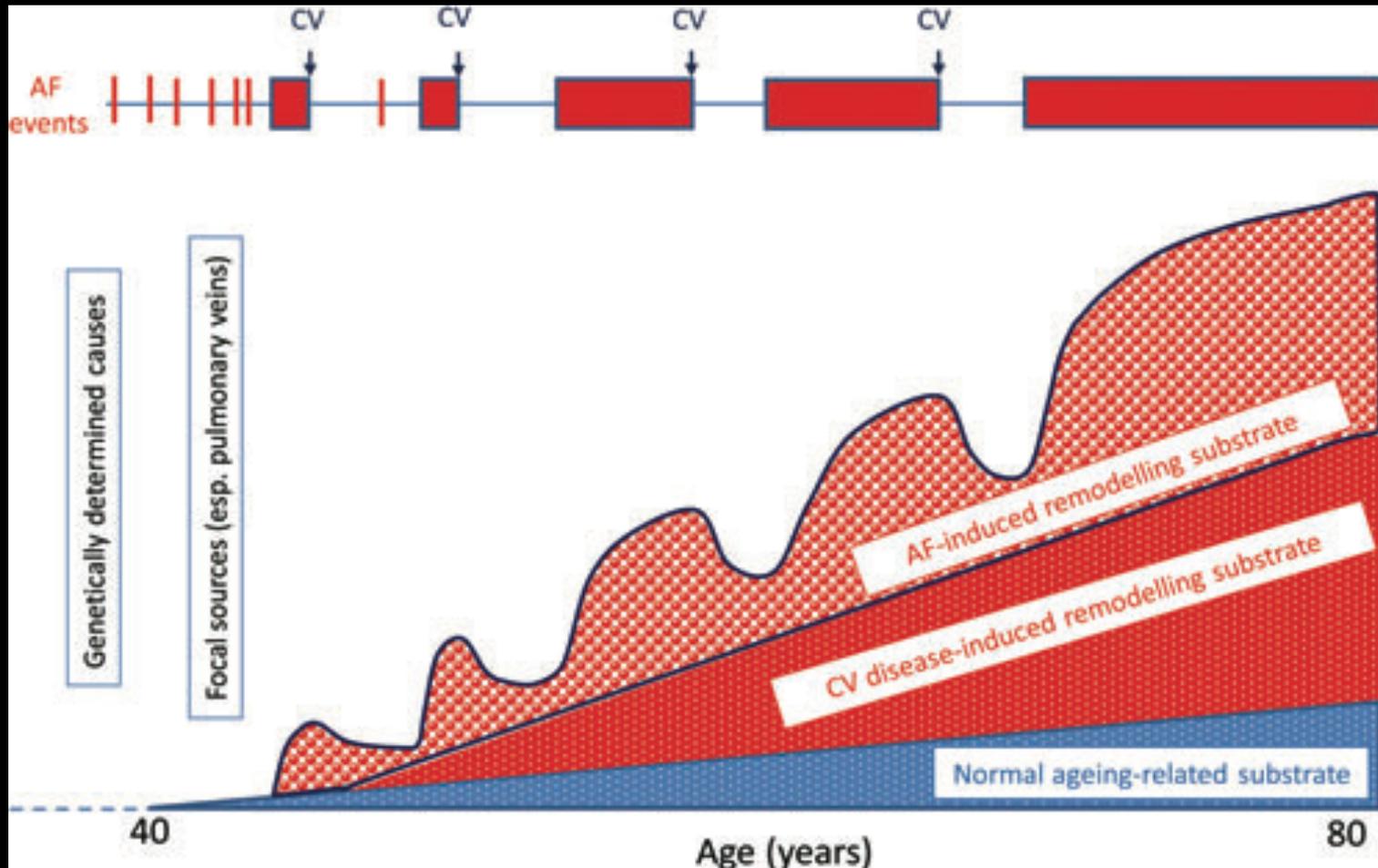
Ter vergelijking Middelheim predictoren : paroxysmale AF , LA grootte en tijd tot ablatie

# ‘Behandel vroegtijdig en het werkt’ Jonge patiënten, jonge AF Wacht niet tot het complex wordt



# De rationale voor vroegtijdige positionering ablatie

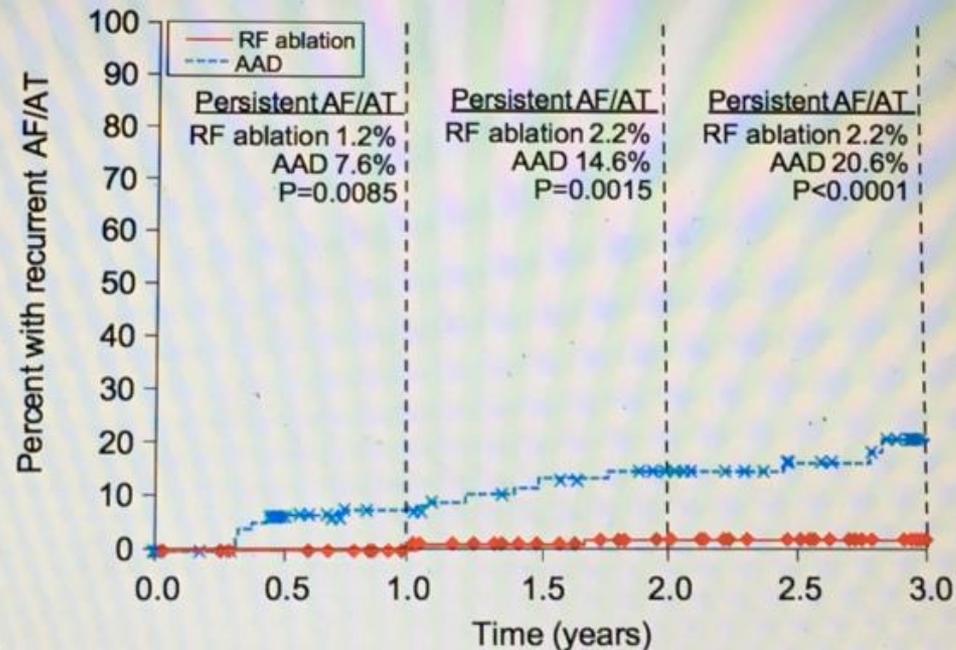
Een vroegtijdigere en meer actieve aanpak kan progressie afremmen en potentieel zelfs omkeren



# 10X minder kans op evolutie naar persistente AF met PVI

## Significantly Lower Rate of Persistent AF/AT With Ablation Than With AAD

PP population

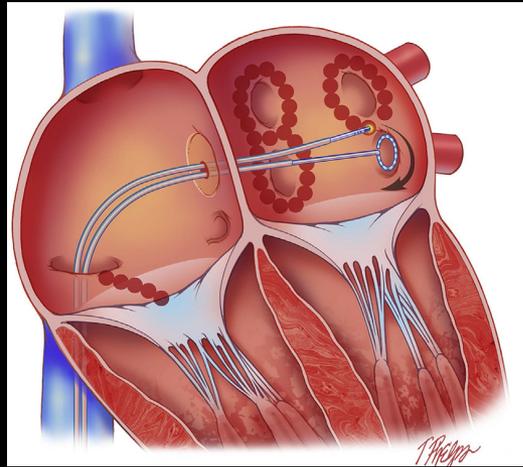


Number of patients at risk

RF ablation	109	109	105	97	87	76	67	40
AAD	108	100	83	71	62	53	43	28

# Welke techniek heeft voorkeur ?

Mijn toetssteen : ablatie met efficiënt, veilig en comfortabel zijn

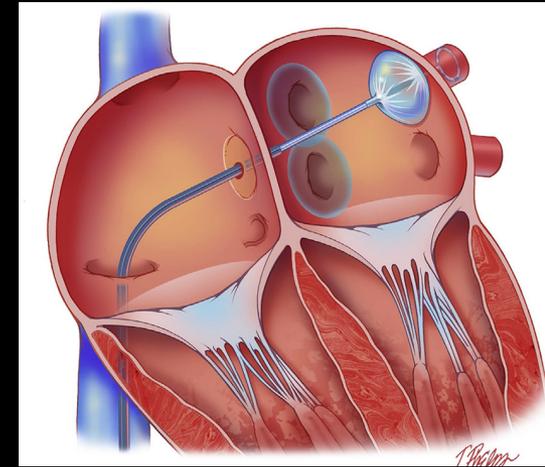


N 762, gemiddelde FU 1,5jaar.

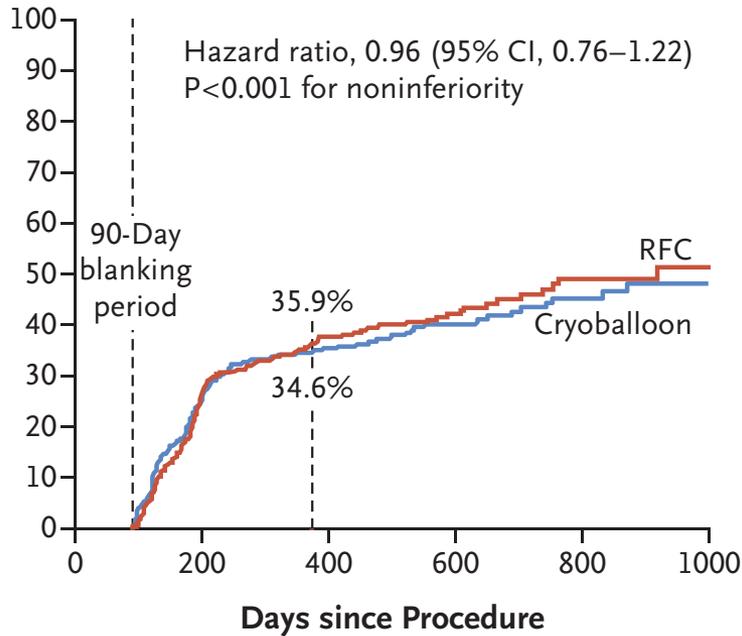
## FIRE versus ICE trial

N=384

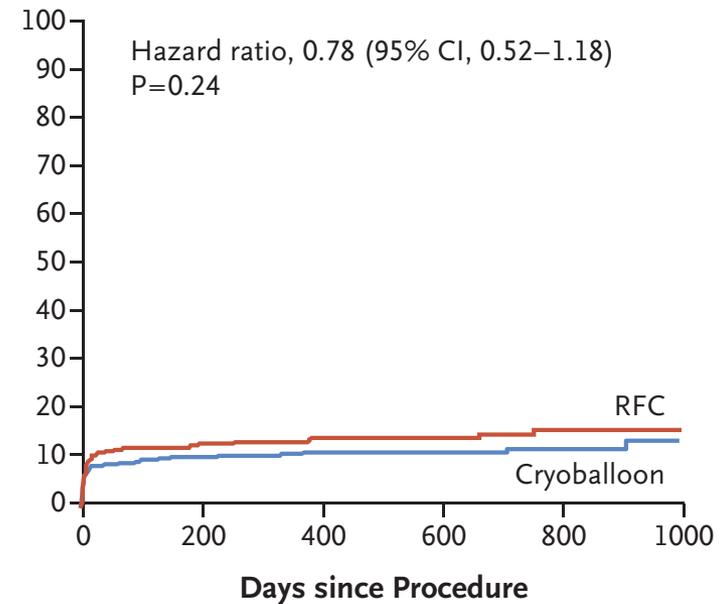
N=378



Patients with Primary Efficacy Event (%)



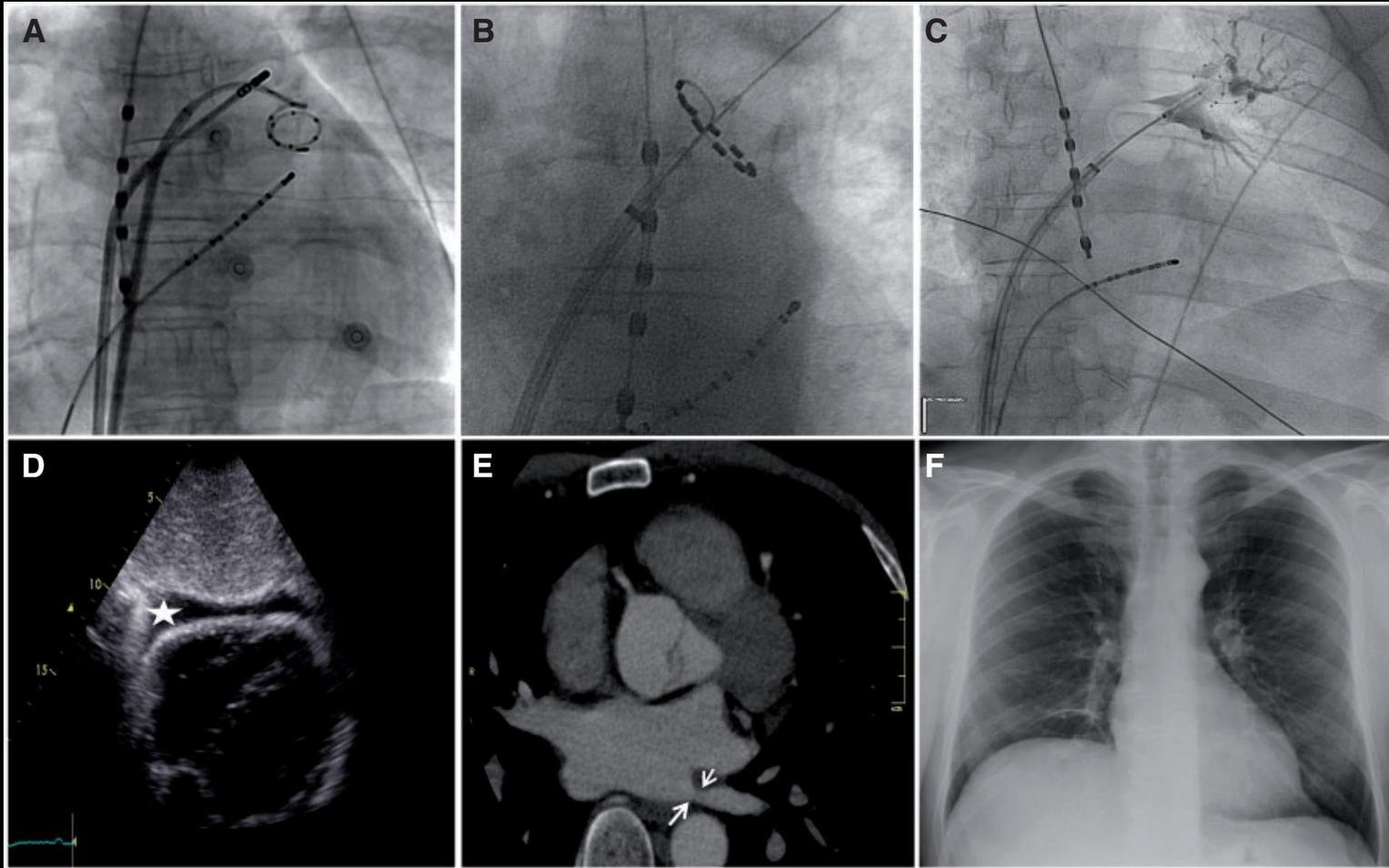
Patients with Primary Safety Event (%)



Niet onbelangrijk...

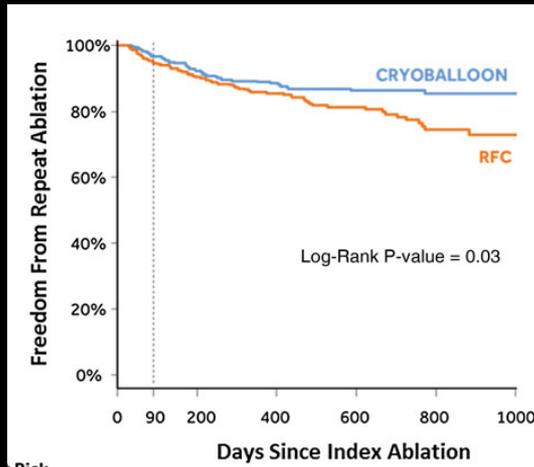
# Vershil in type complicatie (en dus ernst) tussen verschillende technieken

Mogelijkheid om ablatie-techniek te kiezen in functie individueel risicoprofiel patiënt

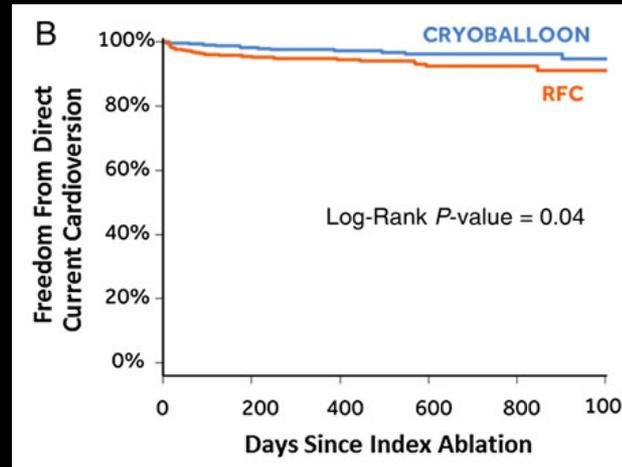


# Minder nood aan cardioversies, minder her-hospitalisaties en minder nood aan redo-procedures na cryo-PVI

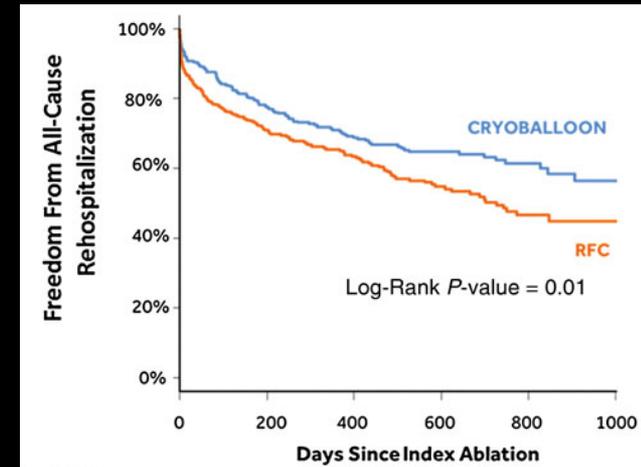
Minder nood aan redo-PVI



Minder cardioversies



Minder kans op her-hospitalisatie

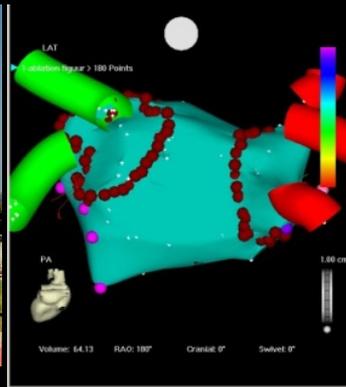


Cryoballoon or radiofrequency ablation for symptomatic paroxysmal atrial fibrillation: reintervention, rehospitalization, and quality-of-life outcomes in the FIRE AND ICE trial. Kuck et al. EHJ.

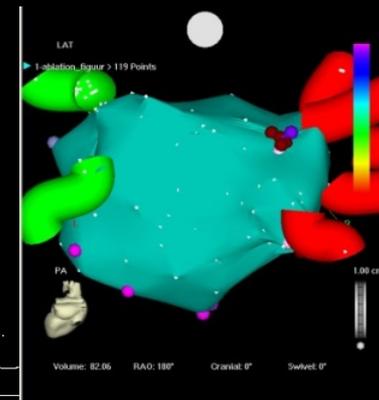
# Herval in AF en nood aan 2<sup>de</sup>PVI veelal het gevolg van PV re connectie “The PV reconnection-AF Recurrence Paradigm”



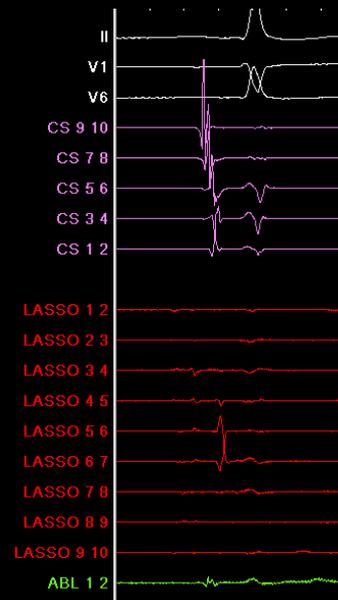
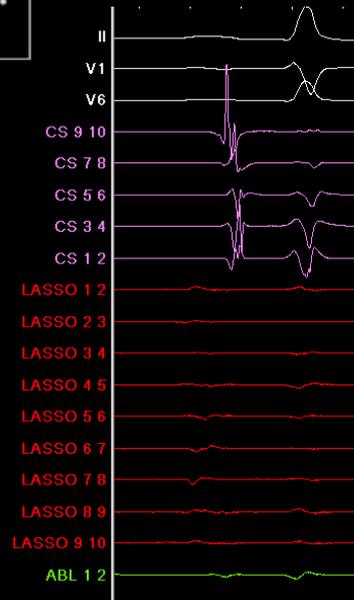
Onze achilleshiel...



Einde PVI

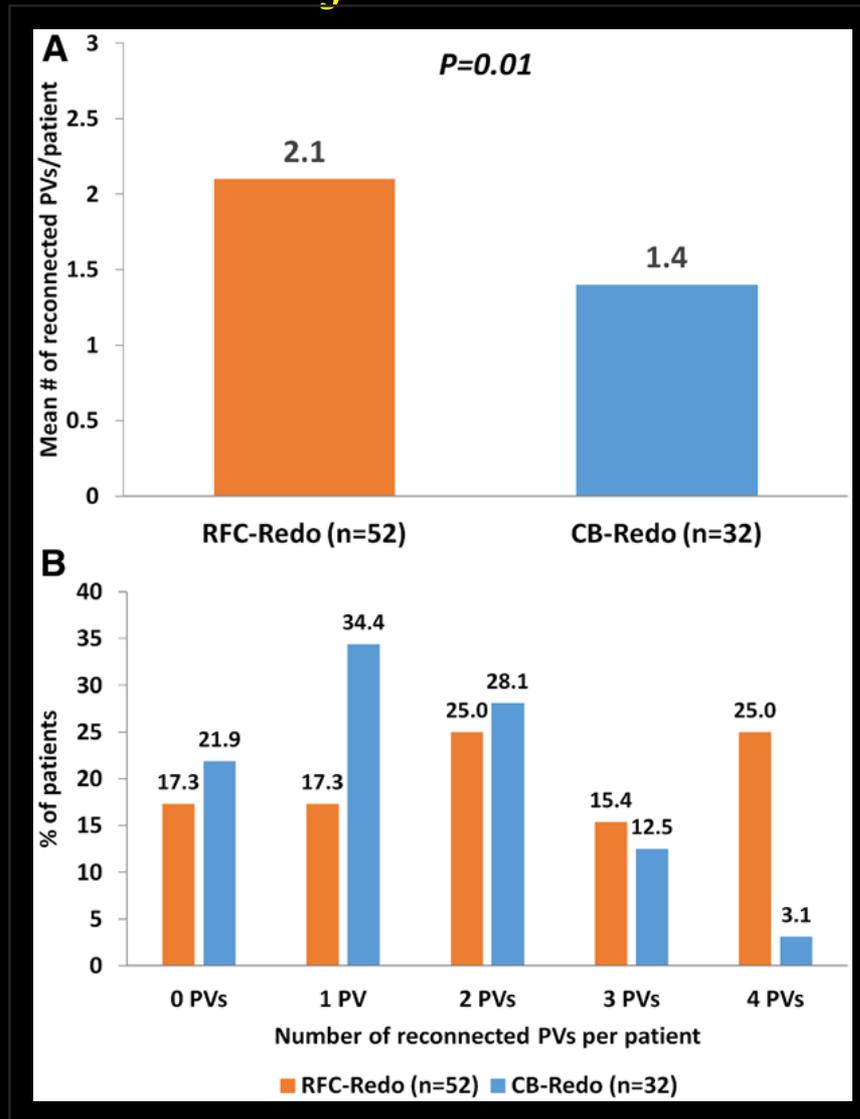


Tijdens redo  
3 mnd later



Doch... we boeken winst, meer en meer blijvende PV isolatie  
gevolg groter first-pass effect en nieuwe uitdagingen voor  
elektrofysioloog

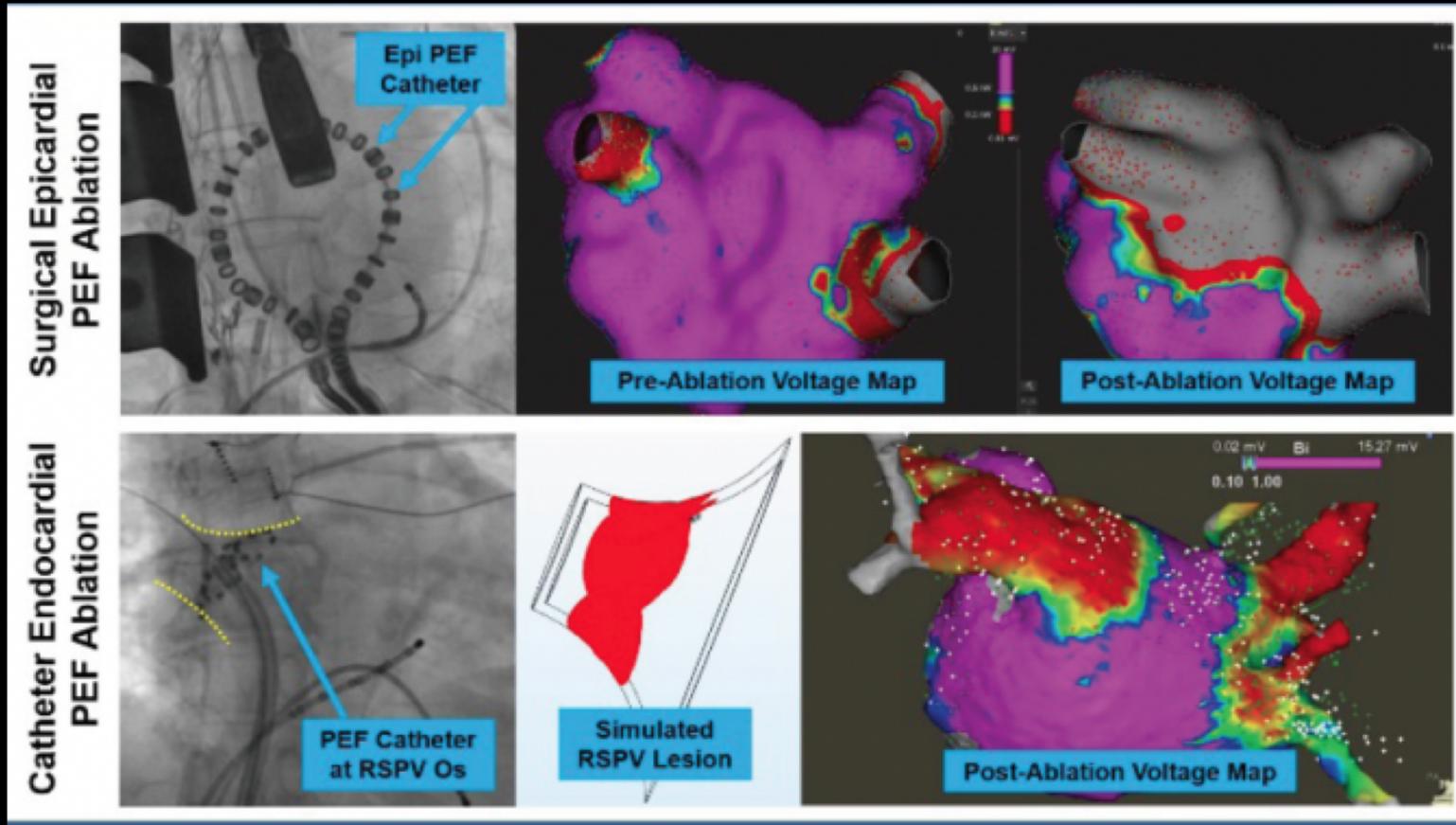
# Na cryo PVI globaal minder PV reconnecties met meer blijvende PV isolatie



lijkt logisch onmiddellijk ablatiecirkel op vers weefsel vs. ablatie punt-per-punt in eigen oedeem

## Een blik in de nabije toekomst

Electroporatie is weefsel-specifiek (atriale cel ideaal target, omliggende structuren niet meebehandeld)), ultra-snelle (in seconden) ablatie door creatie microscopische poriën in cel membranen

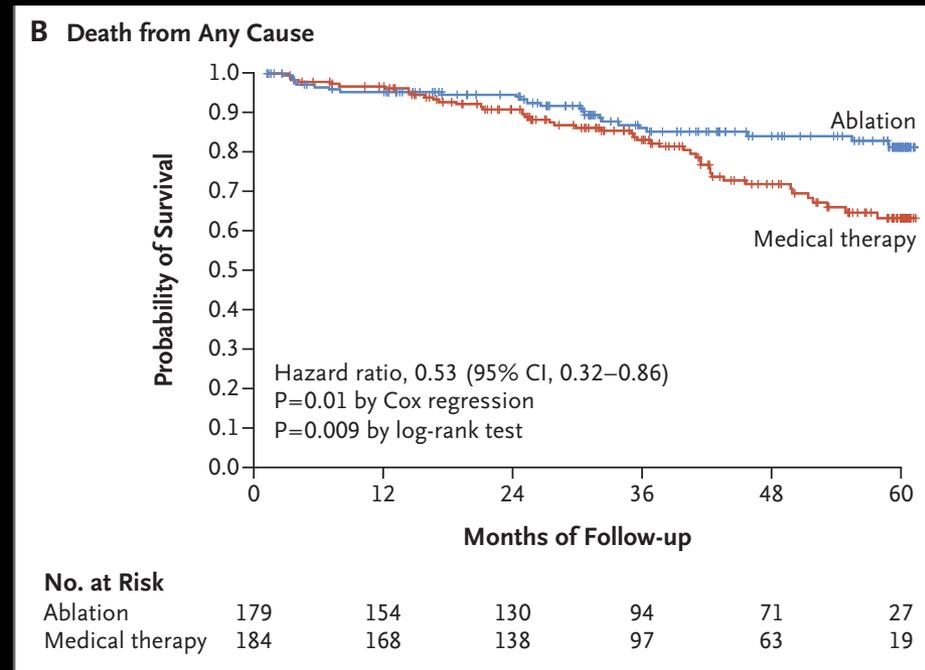
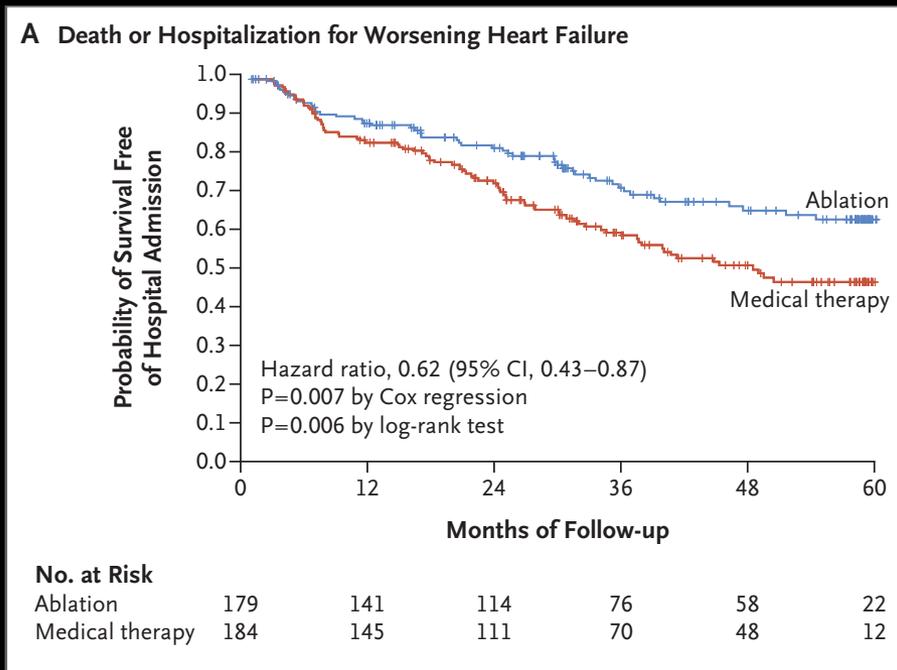


**First-in-human Electroporation Ablation Study Finds Pulsed Electric Fields Can Target Specific Tissue For Atrial Fibrillation**

# Resultaat in de subgroup hartfalen

Age, y					
<65	14/375 (1483)	27/391 (1498)	0.52 (0.27-1.00)		
≥65 and <75	50/577 (2159)	56/553 (2019)	0.84 (0.57-1.23)		.07
≥75	25/156 (514)	18/152 (529)	1.46 (0.80-2.67)		
Atrial fibrillation type <sup>b</sup>					
Paroxysmal	31/470 (1756)	38/476 (1761)	0.82 (0.51-1.31)		
Persistent	49/524 (1922)	55/518 (1860)	0.87 (0.59-1.28)		.93
Long-standing persistent	9/114 (477)	8/101 (426)	1.01 (0.39-2.61)		
Time since onset of atrial fibrillation, y					
≤1	50/540 (1922)	58/523 (1835)	0.83 (0.57-1.21)		
>1	39/560 (2207)	42/562 (2177)	0.92 (0.59-1.42)	.72	
History of congestive heart failure					
No	68/934 (3506)	72/931 (3500)	0.95 (0.68-1.32)		
Yes	21/174 (650)	29/163 (547)	0.61 (0.35-1.08)	.20	
Sleep apnea					
Absent	65/846 (3129)	69/849 (3106)	0.94 (0.67-1.32)		
Present	24/262 (1027)	32/246 (941)	0.69 (0.41-1.17)	.34	
Body mass index <sup>e</sup>					
<30 (Not obese)	42/541 (2012)	53/523 (1886)	0.74 (0.49-1.11)		
≥30 (Obese)	45/545 (2088)	48/561 (2122)	0.96 (0.64-1.44)	.38	

# Daling mortaliteit en hartfalen hospitalisaties door AF ablatie bij patiënten met hartfalen



AF en hartfalen complexe interactie doch AF is potentieel reversibele factor  
Als je AF effectief kan behandelen dan doen patiënten het beter

# Co-morbiditeiten bepalen mede de uitkomst

## Age, y

<65	14/375 (1483)	27/391 (1498)	0.52 (0.27-1.00)
≥65 and <75	50/577 (2159)	56/553 (2019)	0.84 (0.57-1.23)
≥75	25/156 (514)	18/152 (529)	1.46 (0.80-2.67)

## Atrial fibrillation type<sup>b</sup>

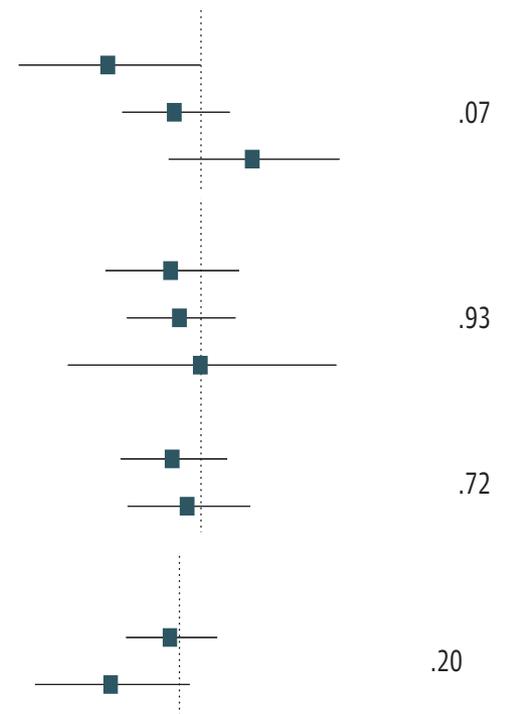
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## Time since onset of atrial fibrillation, y

≤1	50/540 (1922)	58/523 (1835)	0.83 (0.57-1.21)
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## History of congestive heart failure

No	68/934 (3506)	72/931 (3500)	0.95 (0.68-1.32)
Yes	21/174 (650)	29/163 (547)	0.61 (0.35-1.08)

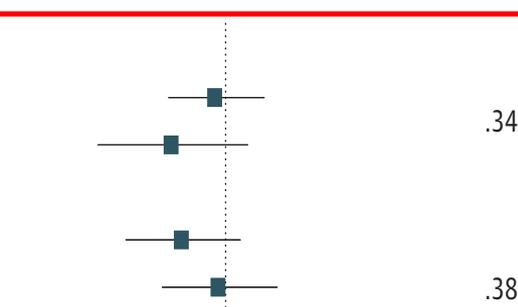


## Sleep apnea

Absent	65/846 (3129)	69/849 (3106)	0.94 (0.67-1.32)
Present	24/262 (1027)	32/246 (941)	0.69 (0.41-1.17)

## Body mass index<sup>e</sup>

<30 (Not obese)	42/541 (2012)	53/523 (1886)	0.74 (0.49-1.11)
≥30 (Obese)	45/545 (2088)	48/561 (2122)	0.96 (0.64-1.44)



## Fascinerende shift van AF als ‘ziekte van de oudere wordende patiënt’ naar ‘aandoening van de middelbare leeftijd’ verklaring ligt in vele AF ‘drivers’

Older age <sup>19</sup>	HR:
50–59 years	1.00 (reference)
60–69 years	4.98 (95% CI 3.49–7.10)
70–79 years	7.35 (95% CI 5.28–10.2)
80–89 years	9.33 (95% CI 6.68–13.0)
Obesity <sup>19,208</sup>	HR:
None (BMI <25 kg/m <sup>2</sup> )	1.00 (reference)
Overweight (BMI 25–30 kg/m <sup>2</sup> )	1.13 (95% CI 0.87–1.46)
Obese (BMI ≥31 kg/m <sup>2</sup> )	1.37 (95% CI 1.05–1.78)
Diabetes mellitus vs. none <sup>19</sup>	HR 1.25 (95% CI 0.98–1.60)
Chronic obstructive pulmonary disease <sup>209</sup>	RR:
FEV1 ≥80%	1.00 (reference)
FEV1 60–80%	1.28 (95% CI 0.79–2.06)
FEV1 <60%	2.53 (95% CI 1.45–4.42)
Obstructive sleep apnoea vs. none <sup>210</sup>	HR 2.18 (95% CI 1.34–3.54)

Smoking <sup>212</sup>	HR:
Never	1.00 (reference)
Former	1.32 (95% CI 1.10–1.57)
Current	2.05 (95% CI 1.71–2.47)
Alcohol consumption <sup>213</sup>	RR:
None	1.00 (reference)
1–6 drinks/week	1.01 (95% CI 0.94–1.09)
7–14 drinks/week	1.07 (95% CI 0.98–1.17)
15–21 drinks/week	1.14 (95% CI 1.01–1.28)
>21 drinks/week	1.39 (95% CI 1.22–1.58)
Habitual vigorous exercise <sup>214</sup>	RR:
Non-exercisers	1.00 (reference)
<1 day/week	0.90 (95% CI 0.68–1.20)
1–2 days/week	1.09 (95% CI 0.95–1.26)
3–4 days/week	1.04 (95% CI 0.91–1.19)
5–7 days/week	1.20 (95% CI 1.02–1.41)

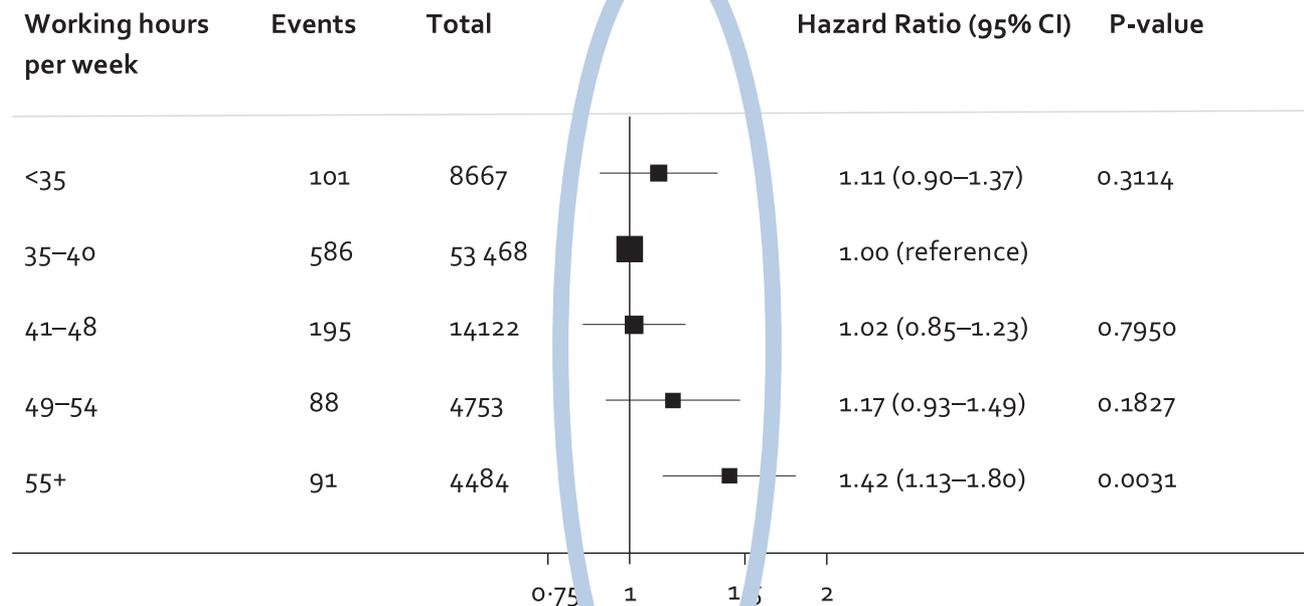
Stapsgewijze toename in relatief risico binnen iedere risico factor

Enkele nieuwkomers....

# Lange werktijden (>55u/week vs. standaard 35-40) zijn geassocieerd met verhoogd CVA risico, doch ook met VKF

Gecorrigeerd voor lifestyle factoren (roken, alcohol, obesitas) en socio-economische status en geen onderliggende CV ziekte

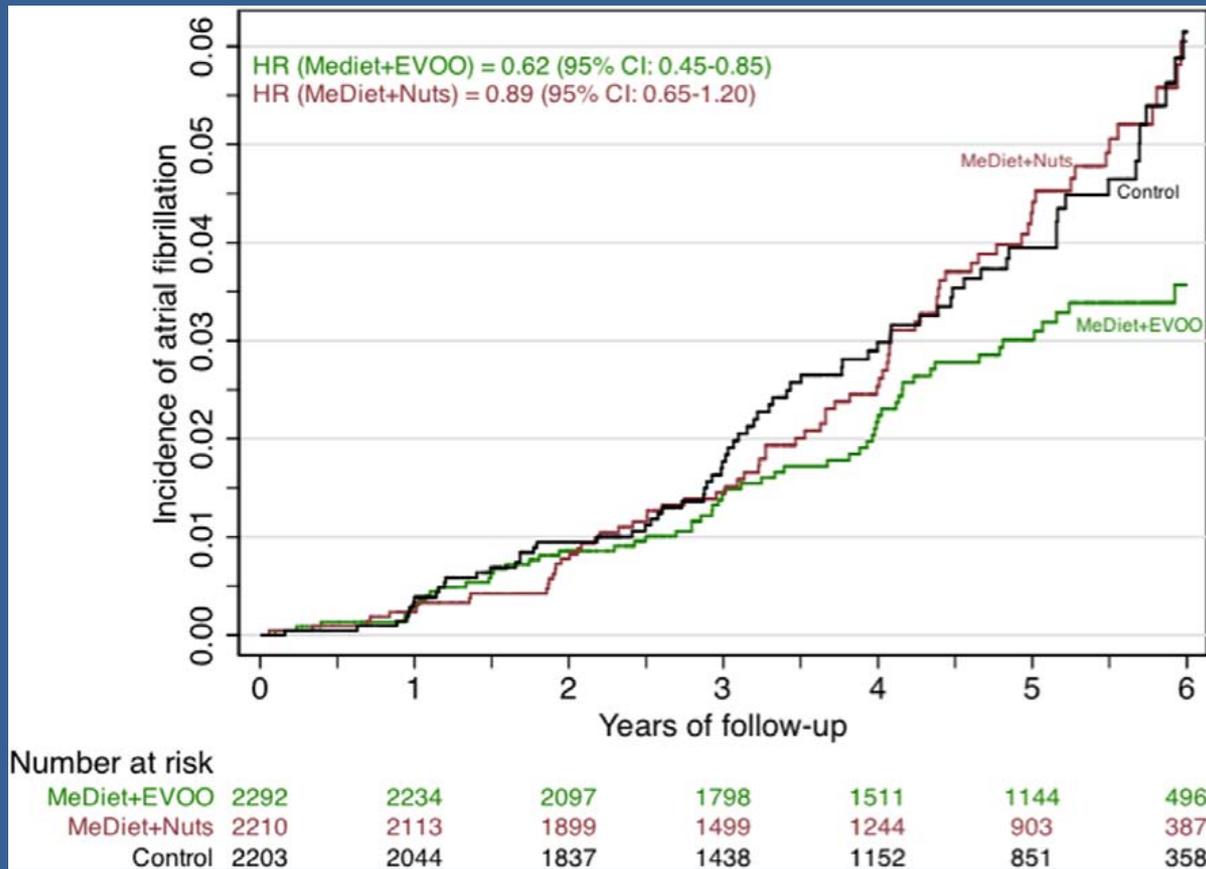
40% hoger risico op ontwikkeling van VKF



**Figure 2** Association of categories of weekly working hours with incident atrial fibrillation. Estimates are adjusted for age, sex, and socioeconomic status.

# Mediterrane dieet met extra olijfolie is erg protectief

Zeer relevant in primaire preventie AF



Mogelijke verklaringen

Inflammatie en oxidatieve stress rol in AF pathogenese

Olijfolie door rijkdom een polyfenolen werkt anti-inflammatoir en anti-oxidatief

Komt overeen met duidelijke daling in CRP waarden (niet in andere groepen)

# Zelfs negatieve emoties triggeren AF, goede 'luim' werkt beschermend

**TABLE 2** End-of-Day Emotion Summary and Next-Day Atrial Fibrillation

	Unadjusted Odds Ratio	95% Confidence Interval	p Value
	Adjusted Odds Ratio		
Good mood	0.82	0.53-1.27	0.38
	0.81	0.54-1.21	0.36
Sadness	1.22	0.78-1.89	0.39
	1.25	0.78-2.00	0.36
Anger	1.69	1.01-2.81	0.05
	1.73	1.04-2.90	0.04
Stress	1.82	1.16-2.84	0.009
	1.88	1.18-3.02	0.008
Impatience	1.44	0.98-2.11	0.07
	1.48	0.99-2.23	0.06
Worry	1.37	0.88-2.15	0.17
	1.44	0.89-2.34	0.14

Odds ratios quantify the likelihood of atrial fibrillation after periods during which patients endorsed, compared with those during which they did not endorse, a particular emotion. Multivariable models adjusted for age, sex, use of beta-blockers, simultaneous alcohol intake, day of week (weekday/weekend), and season and included all emotions.

- Paroxysmale AF patiënten
- eDiary: neerschrijven emoties aan einde van de dag
- 1/mnd Holter, bij symptomen event-recording
- Einde-dag emotie met dag nadien AF vergeleken met einde-dag emotie met dag nadien geen AF

## Nog enkele wist-je-datjes

- Bij rookstop daling AF risico met 36%
- Zelfs 1 glas alcohol per dag het AF risico verhoogt
- Er geen link is tussen AF en koffie, thee of chocolade
- Je tijdens gelukkige dagen 85% lager risico hebt op AF
- Yoga (zonder snuiven) het AF risico doet dalen met 24% .
- Fysieke actief zijn beschermend is (uitzondering intensieve duursporter)

Onderkenning belang van  
risicofactoren laatste jaren fors  
toegenomen vooral door  
modificeerbaarheid, indien  
correctie facilitatie behoud  
sinusritme met betere respons  
na PVI

De tafel blijft eindelijk rechtstaan...

# Risicofactor management nu 4<sup>de</sup> pijler in de AF R/

Je risicofactoren aanpakken= Fitness en yoga voor het atrium  
Belangrijke rol van huisarts, evt. aanvulling in toekomst met AF verpleegkundige



Anticobeleid, CVA preventie

“Rate”  
controle

Risk factor modification

Trukken ter verbetering structurele en elektrische  
gezondheid atrium

‘gewichtsverlies, slaapapnee, regelmatig bewegen bij  
sedentaire patiënten, alcoholbeperking’

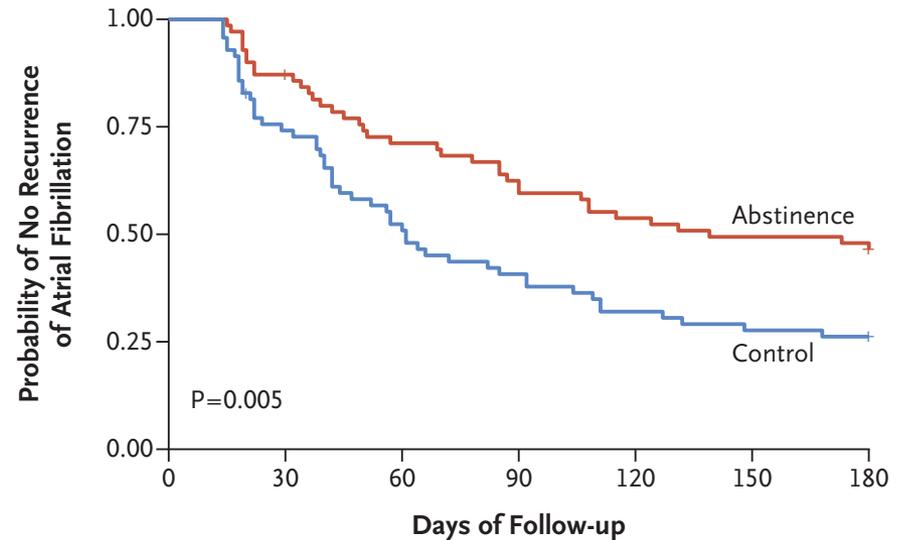
“Ritme”controle

# Alcohol abstinence in regular drinkers with AF gepaard met daling aritmie-recidieven

**Table 2.** Alcohol Intake at Baseline.

Variable	Abstinence Group (N=70)	Control Group (N=70)
Alcohol intake — no. of standard drinks/wk	16.8±7.7	16.4±6.9
Beverages consumed — no. (%)		
Wine	48 (69)	47 (67)
Beer	34 (49)	34 (49)
Spirits	13 (19)	9 (13)
Binge drinking — no. (%)*	20 (29)	16 (23)

2.1±3.7 (daling met 87.5%),



No. at Risk	0	30	60	90	120	150	180
Abstinence	70	61	49	43	37	34	33
Control	70	51	36	28	22	19	18

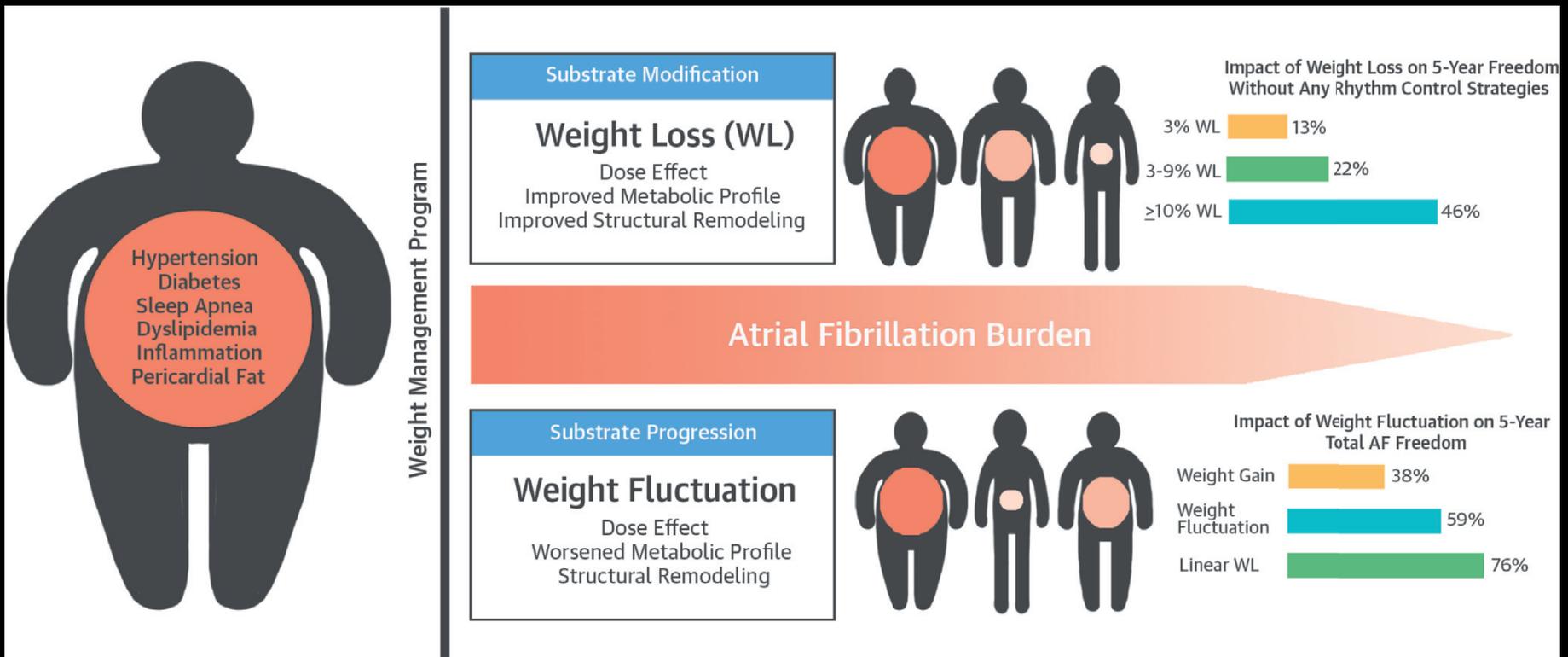
**Figure 2.** Time to Recurrence of Atrial Fibrillation.

Mechanisme? Vermoedelijk multifactorieel

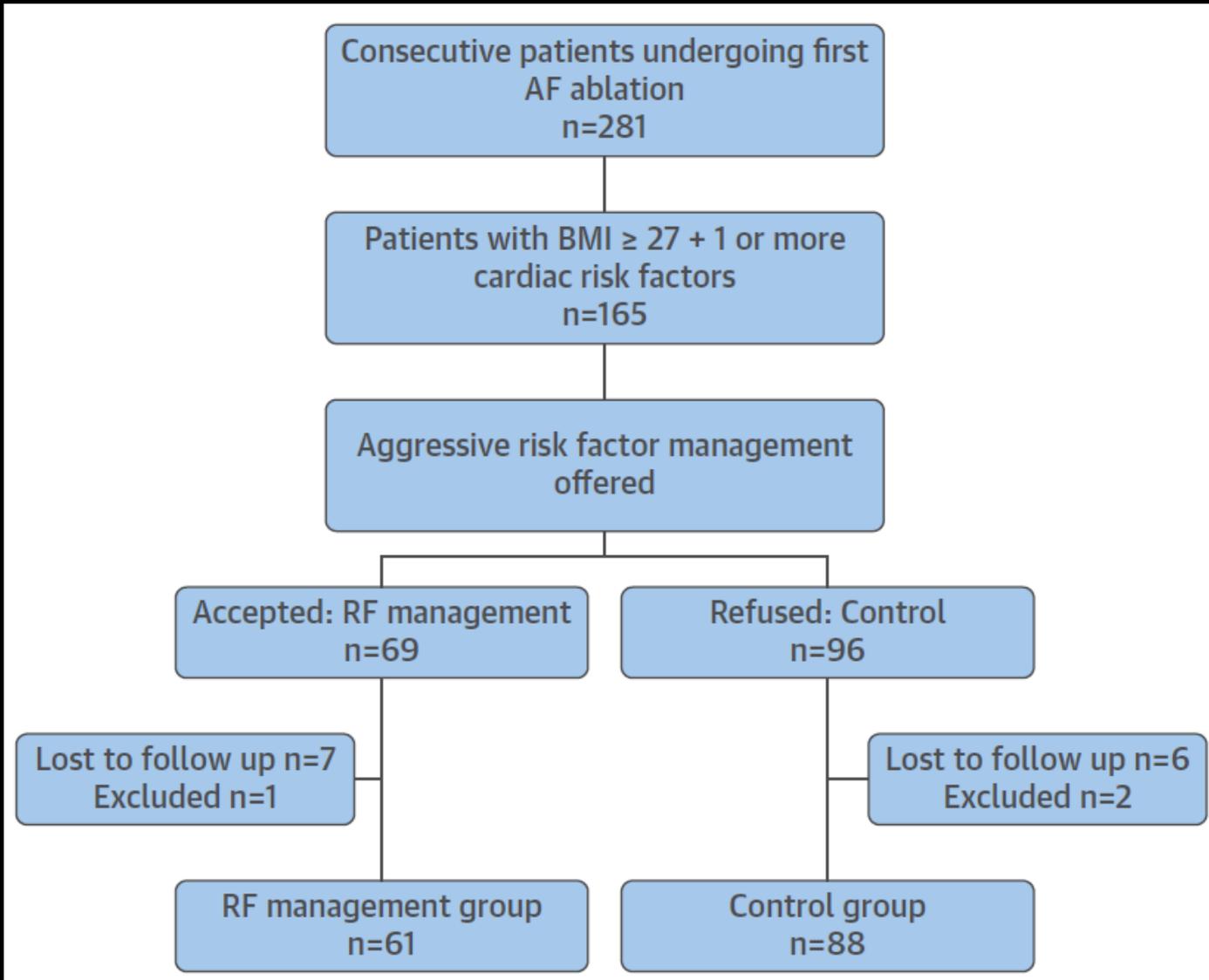
Alcohol gekende trigger AF, associatie met autonome modulatie met gedaalde HR variabiliteit en vagale stimulatie, associatie 'binge 'drinking en inflammatie, negatieve invloed alcohol op linkeratrium, associatie alcohol en obesitas, ...

# Obesitas: meestal cluster van meerdere co-morbiditeiten

Progressief effect gewichtsverlies dosis-afhankelijk met daling AF risico, ook beter niet te veel schommelingen tijdens vermageringsproces (best lineair)



# Revalidatie met aandacht voor risicofactoren nu integraal deel ablatie behandeling



AHT, glucose-intolerantie, hyperlipidemie, OSAS, smoking, alcohol exces

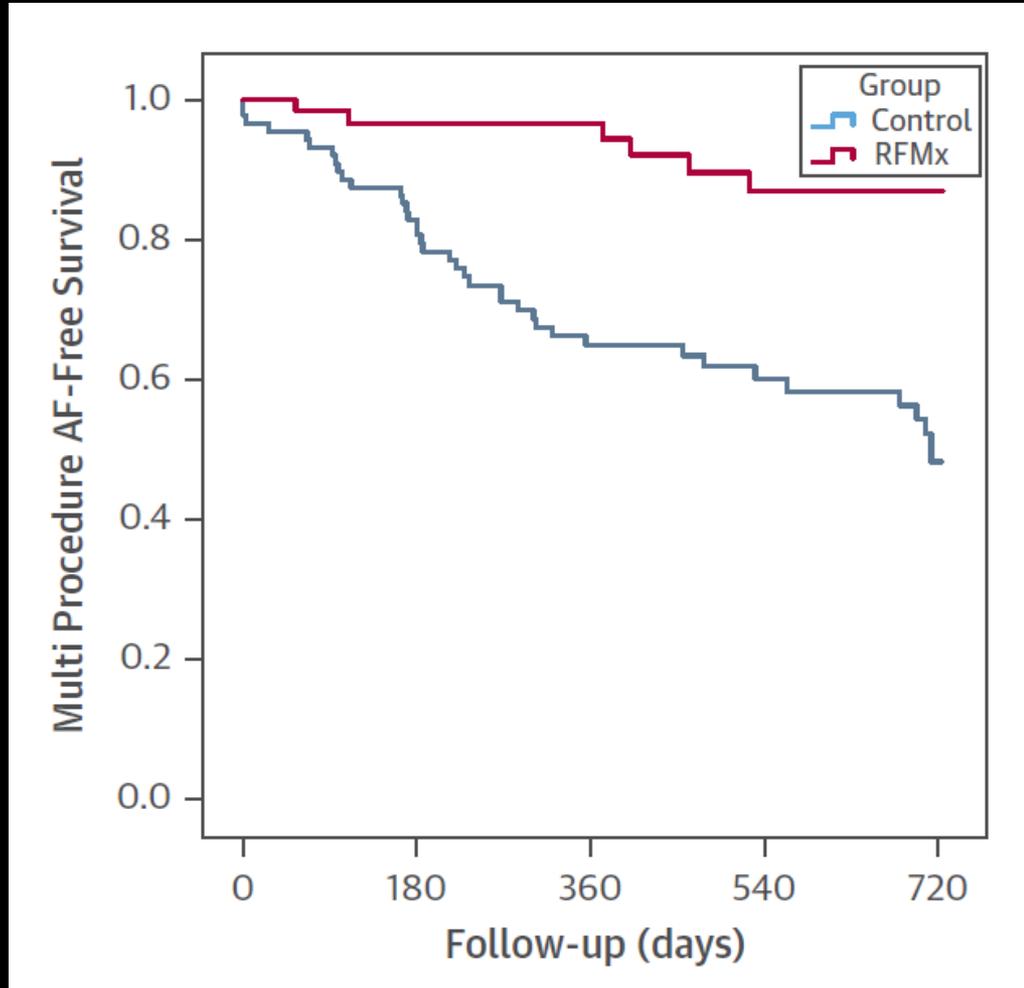
≈ (strikte) cardiale revalidatie

# Impressionante modificatie van risicofactoren echo-bevindingen en symptomen

	Control Group (n = 88)			RFM Group (n = 61)			p Value*	p Value†
	Baseline	Follow-Up‡	p Value*	Baseline	Follow-Up‡	p Value*		
<b>Risk factors</b>								
Weight, kg	96.6 ± 16.8	95.8 ± 17.6	0.13	100.7 ± 17.6	87.5 ± 14.9	<0.001	0.002	
BMI, kg/m <sup>2</sup>	32.1 ± 4.7	31.8 ± 4.9	0.12	33.5 ± 4.6	29.1 ± 3.9	<0.001	<0.0011	
Mean SBP, mm Hg	158.7 ± 21.3	138.2 ± 18.0	<0.001	160.8 ± 20.3	126.8 ± 12.8	<0.001	0.006	
DM with HbA <sub>1c</sub> ≥7%, n	17	5		9	0		0.001	
No. with AHI >30	54	46		32	16		<0.001	
<b>Medication use</b>								
No. of antiarrhythmic agents	1.0 ± 0.2	0.7 ± 0.7	<0.001	1.1 ± 0.3	0.3 ± 0.6	<0.001	<0.001	
No. of antihypertensive agents	1.6 ± 1.2	1.9 ± 1.3	0.2	1.5 ± 1.1	1.2 ± 0.9	0.04	<0.001	
<b>Echocardiographic measures</b>								
LA volume index, ml/m <sup>2</sup>	42.4 ± 10.4	39.5 ± 12.1	0.07	42.5 ± 12	30.4 ± 8.3	<0.001	0.001	
LV septum, mm	11.0 ± 2.0	10.9 ± 0.19	0.047	12.0 ± 2.0	9.6 ± 0.17	<0.001	<0.001	
LVIDd, cm	5.1 ± 0.7	5.1 ± 0.6	0.204	5.3 ± 0.5	4.9 ± 0.6	<0.001	0.047	
LVEF, %	60 ± 10.1	61.1 ± 8	0.538	61.3 ± 10	62.6 ± 5.5	0.524	0.971	
<b>Atrial Fibrillation Severity Score</b>								
AF frequency (1-10)	6.6 ± 1.1	3.2 ± 1.1	<0.001	6.8 ± 1.2	2.0 ± 0.9	<0.001	<0.001	
AF duration (1.25-10)	6.7 ± 1.3	3.3 ± 1.3	<0.001	6.4 ± 1.6	2.1 ± 0.9	<0.001	0.001	
AF episode severity (1-10)	6.9 ± 1.3	5.2 ± 1.9	<0.001	6.6 ± 1.5	3.3 ± 1.5	<0.001	<0.001	
AF symptom subscale (0-35)	23.1 ± 3.7	13.3 ± 6.2	<0.001	22 ± 5.2	7.1 ± 4.6	<0.001	<0.001	
Global well-being (1-10)	2.5 ± 0.9	5.7 ± 2.0	<0.001	2.4 ± 0.9	7.6 ± 1.7	<0.001	<0.001	

# Risico factor management verbetert lange termijn uitkomst na ablatie

Ablatie als onderdeel van behandeling , naast aanpak onderliggende oorzaken



# Binnenkort ook lijstje voor iedere AF patiënt op je bureau met de te behalen targets

## Aggressive Risk Factor Management

### Weight Management and Exercise

- Educate for permanent lifestyle change
- Diet Plan
- Initial target: >10% weight loss. Final target: BMI <27 kg/m<sup>2</sup>
- Avoid weight fluctuation
- Exercise: 30 minutes for 3-4x per week
- Increase type and duration of activity up to 250 minutes per week

### Hyperlipidaemia

- Initial lifestyle measures
- At 3 months: start statins if LDL >100 mg/dl
- Add fibrates if TG >200 mg/dl
- Start fibrates if TG >500 mg/dl

### Obstructive Sleep Apnoea

- Overnight sleep study
- CPAP if AHI ≥30; or ≥20/h with resistant HT or daytime somnolence
- Check adherence: regular CPAP machine data download

### Hypertension

- Home BP diary: 2-3 x daily
- Reduce salt
- Start ACEI or ARB
- Target: <130/80 mmHg (at rest) & <200/100 mmHg (at peak exercise)

### Diabetes

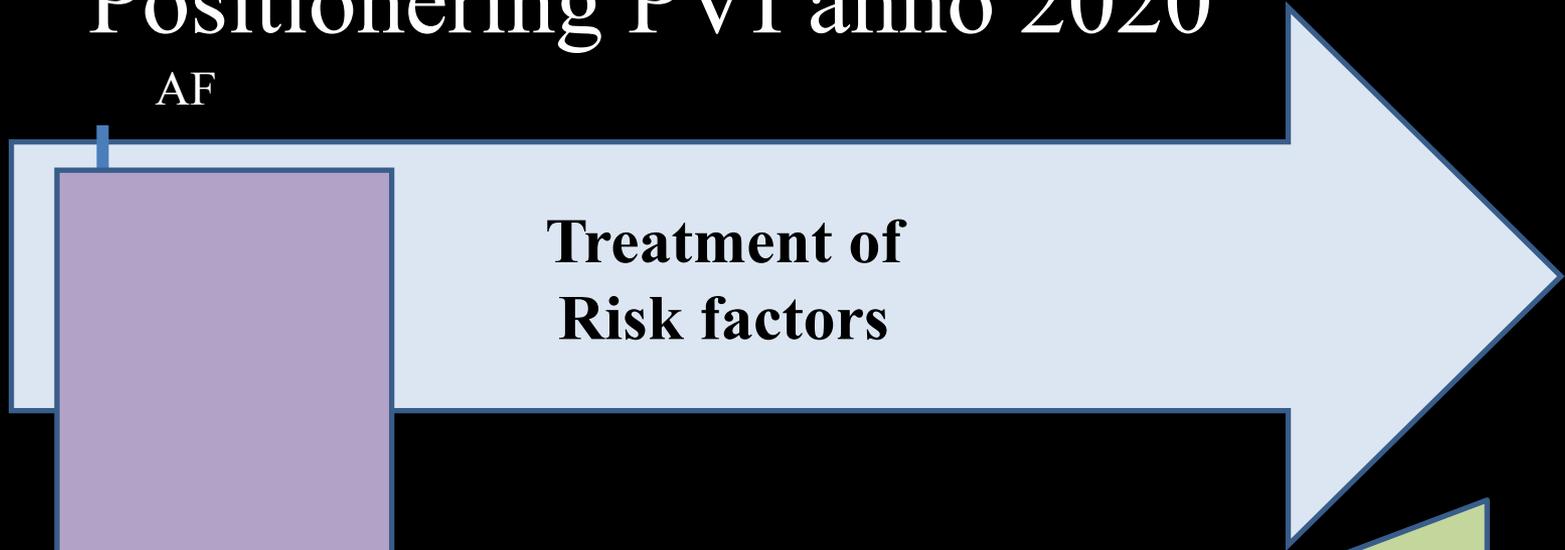
- Glucose tolerance test
- Lifestyle measures
- At 3 months: Metformin if HbA1c >6.5%
- Diabetes clinic

Smoking Cessation & Alcohol Abstinence (or reduction to 30g per week)

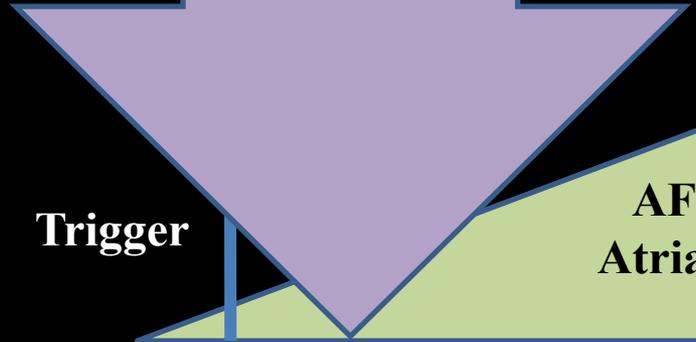
# Positionering PVI anno 2020

Sinusritme

AF

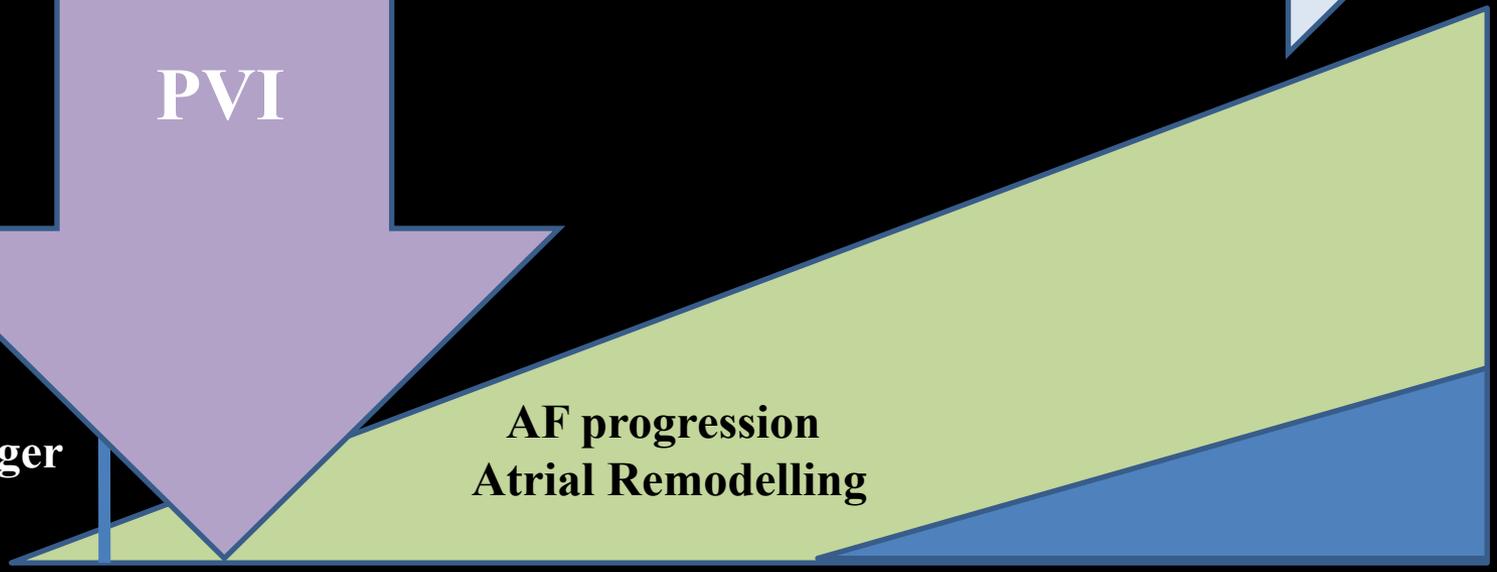


PVI



Trigger

AF progression  
Atrial Remodelling



Window of opportunity



Meer complex substraat

Heel erg bedankt!

