



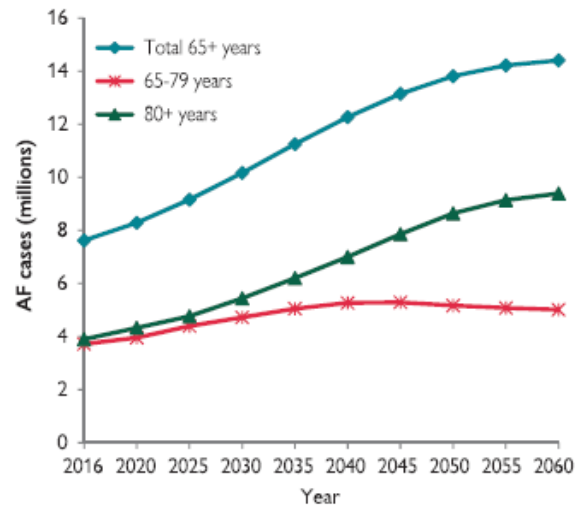
NVHVV  
April 2023  
Hadrian Wijnmaalen

# ABLATIE VAN ATRIUM FIBRILLEREN (bij patiënten met hartfalen)

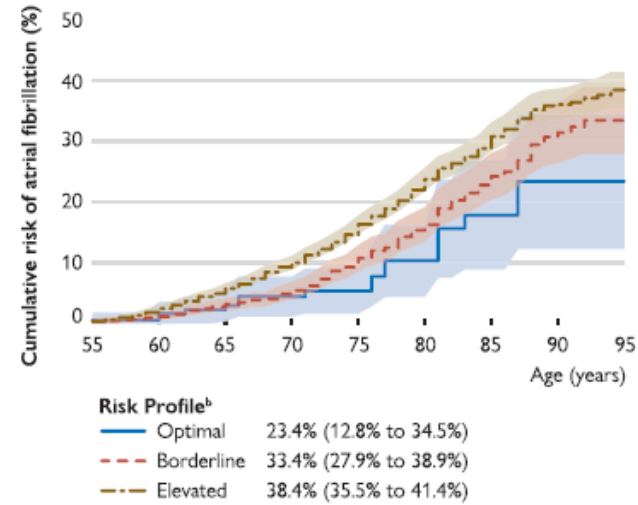


# Atriumfibrilleren

**Projected increase in AF prevalence among elderly in EU 2016-2060**



**Lifetime risk of AF increases with increasing risk factor burden<sup>a</sup>**



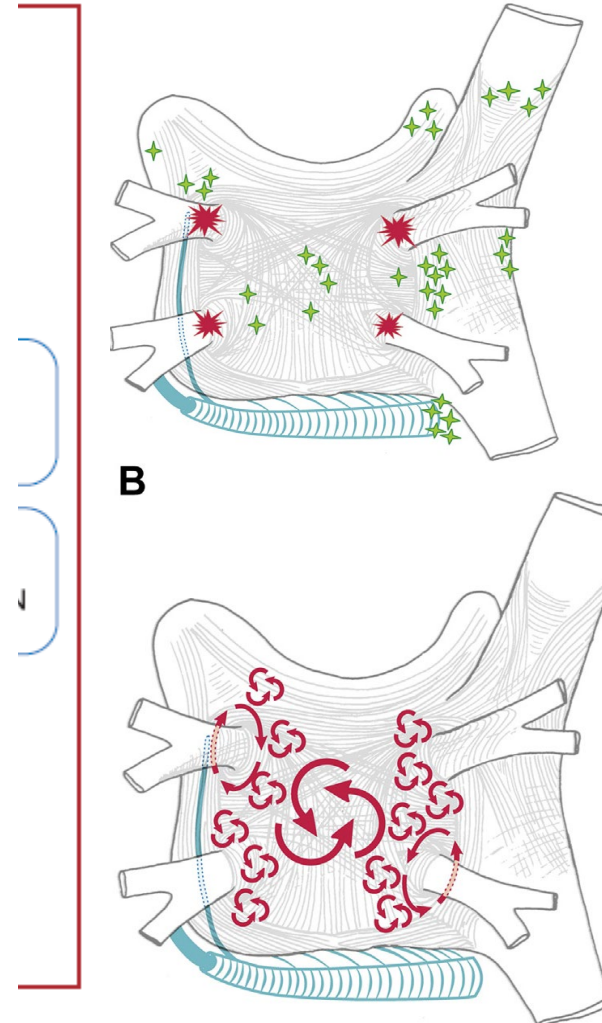
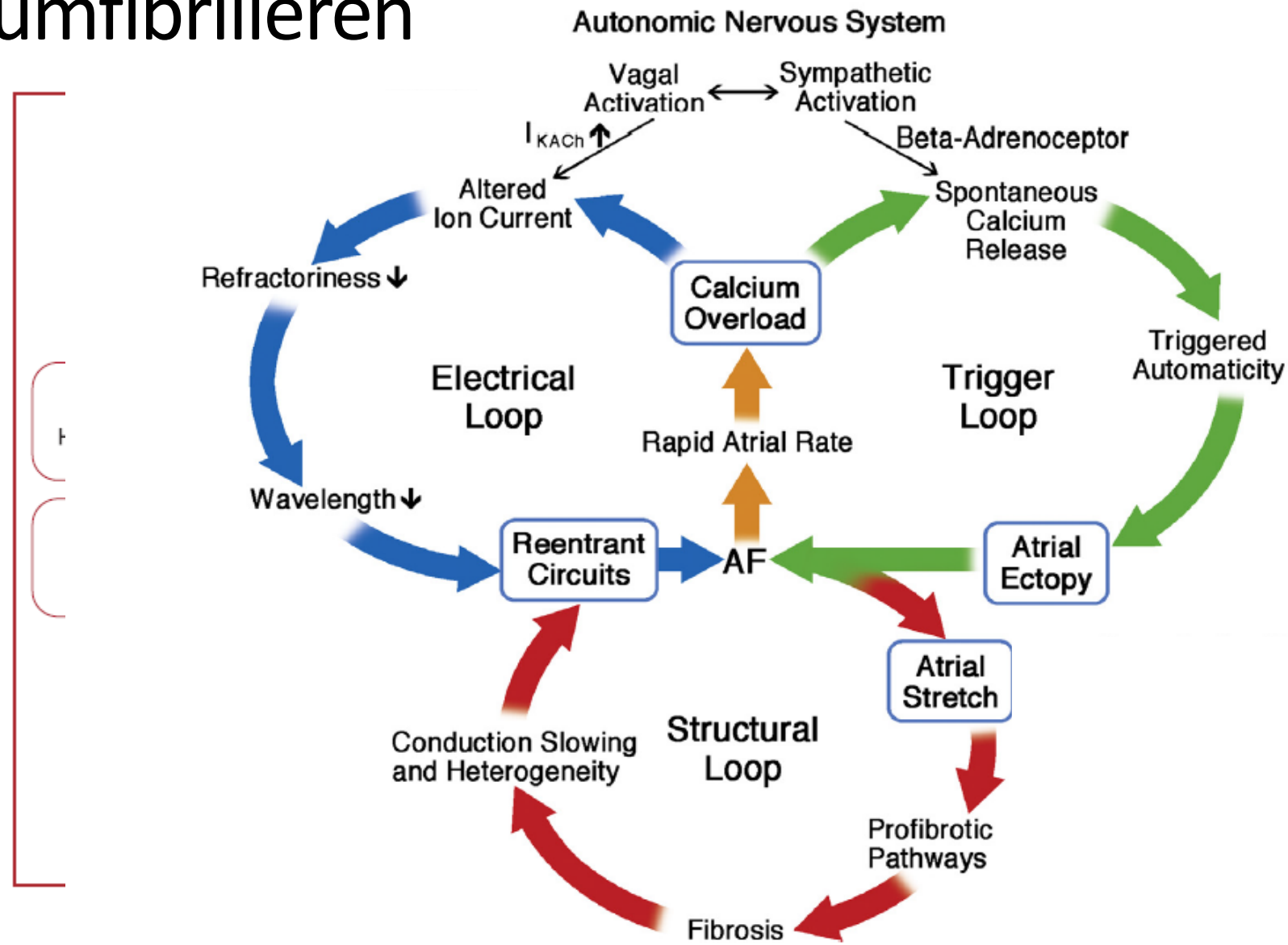
**LIFETIME RISK for AF  
1 in 3 individuals**










of European ancestry  
at index age of 55 years  
37.0% (34.3% to 39.6%)

een tsunami?

# Atriumfibrillieren



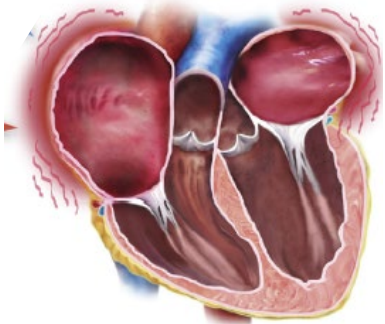
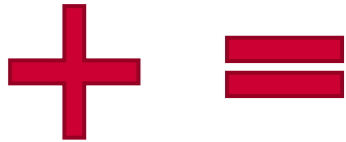
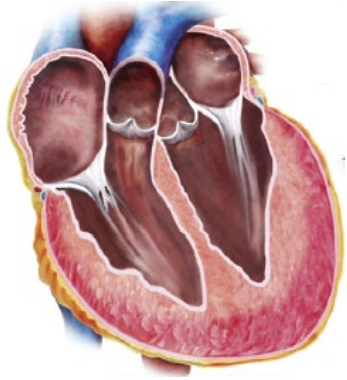
# START DANGER ZONE

<p>LV dysfunction / Heart failure</p> 	<p>In 20-30% of AF patients</p>	<p>Death</p> 	<p>1.5 - 3.5 fold increase</p>	<p>Hospitalizations</p> 	<p>10-40% annual hospitalization rate</p>
<p>Cognitive decline / Vascular dementia</p> 	<p>HR 1.4 / 1.6 (irrespective of stroke history)</p>	<p>Stroke</p> 	<p>20-30% of all ischaemic strokes, 10% of cryptogenic strokes</p>	<p>Impaired quality of life</p> 	<p>&gt;60% of patients</p>
		<p>Depression</p> 	<p>Depression in 16-20% (even suicidal ideation)</p>		

# Stelling:

- Wanneer AF optreedt bij mijn hartfalenpatiënt ligt de focus van behandeling op verbetering van diens Hartfalen gerelateerde therapie. Als na optimalisatie en cardioversie AF persisteert accepteer ik het AF.
- AF beïnvloed de prognose van mijn hartfalenpatiënt. Wanneer AF optreedt stel ik alles in het werk om sinus ritme te herstellen.

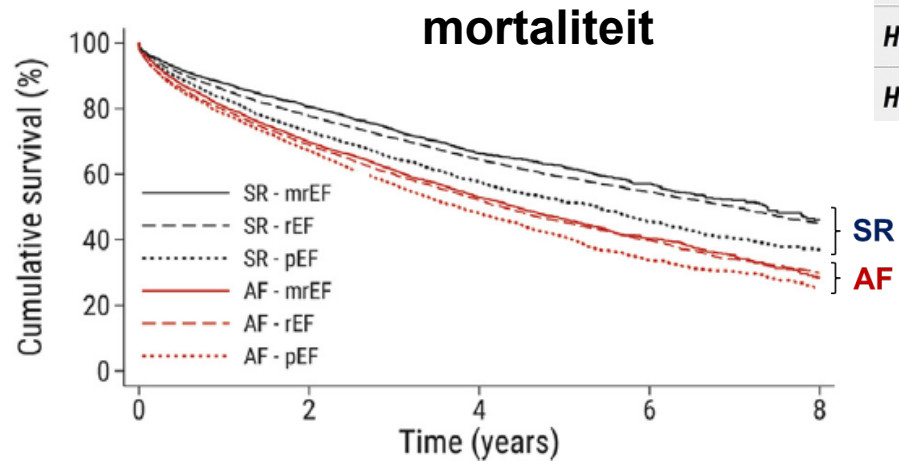
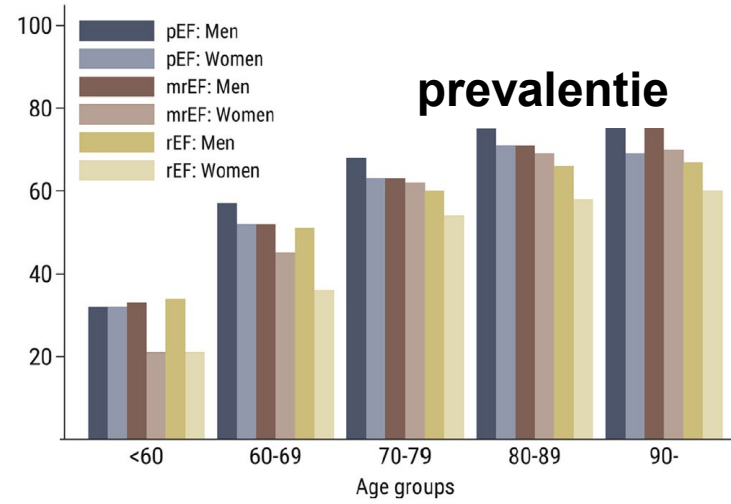
# HARTFALEN



# ATRIUM FIBRILLEREN



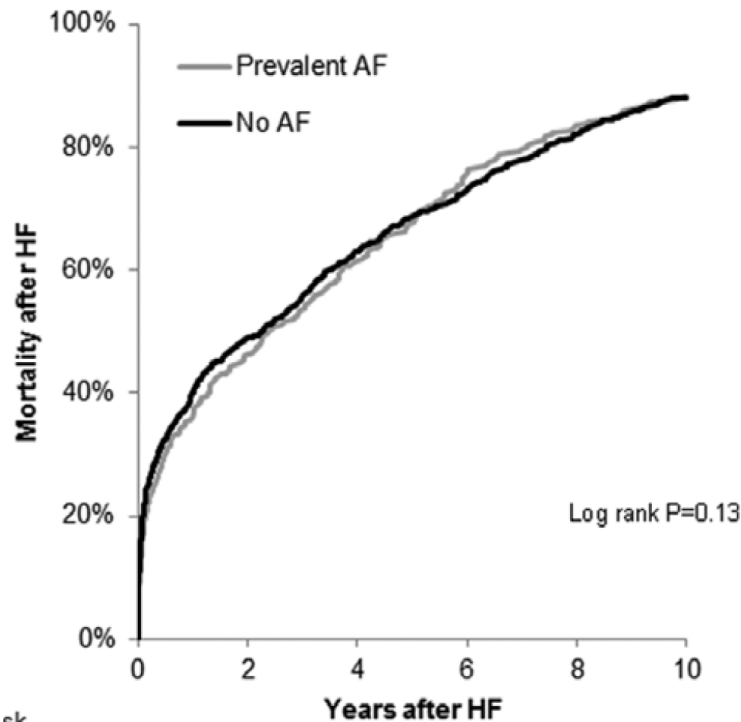
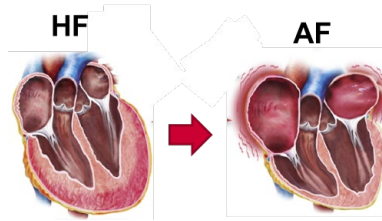
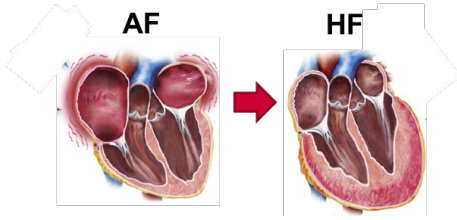
## Swedish heart failure registry n=41446



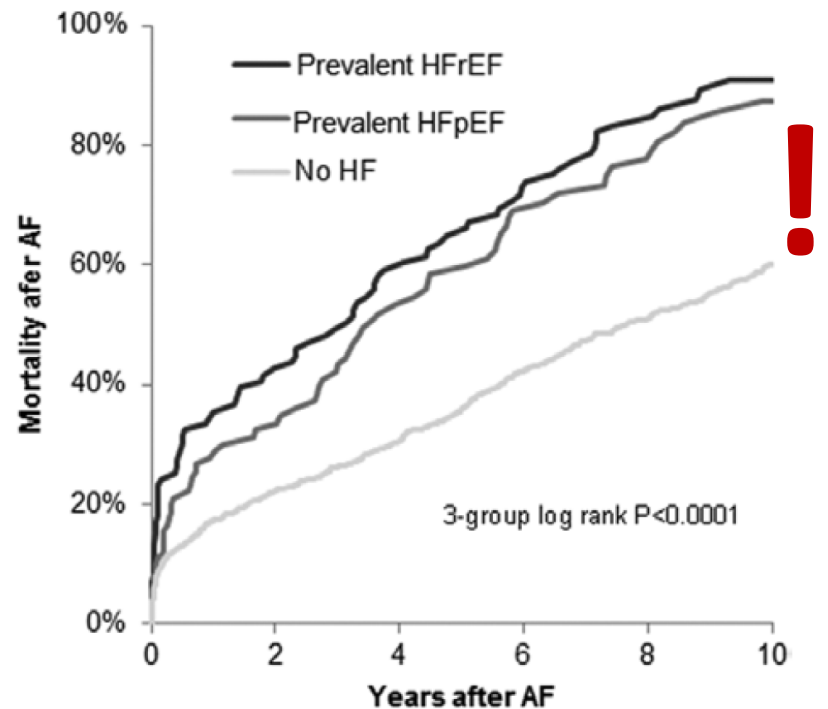
	Multivariable adjusted hazard ratio (95% CI)
<b>HFpEF</b> (n=9595)	1.11 (1.02-1.21)
<b>HFmrEF</b> (n=8897)	1.22 (1.12-1.33)
<b>HFrEF</b> (n=22954)	1.17 (1.11-1.23)



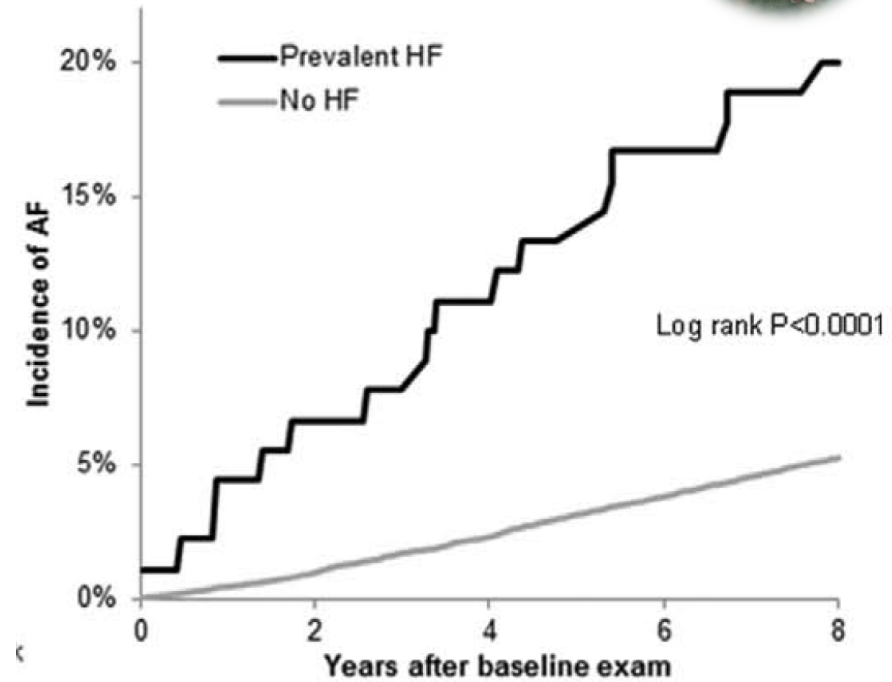
# Maakt de volgorde uit?



Nieuw HF in AF - mortaliteit

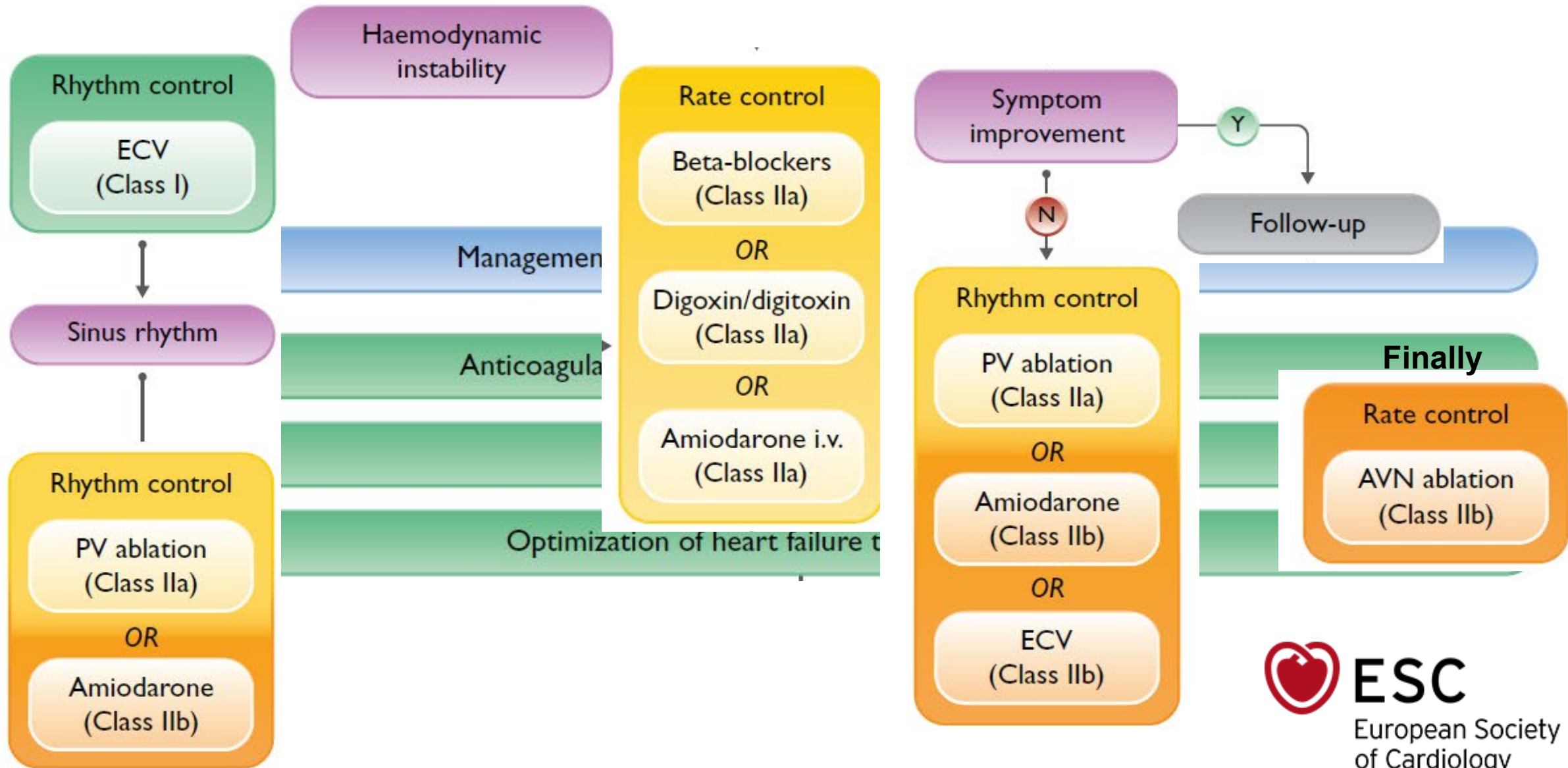


Nieuw AF in HF - mortaliteit



Nieuw AF in HF - incidentie

**Optreden van AF verhoogt mortaliteit in HF**

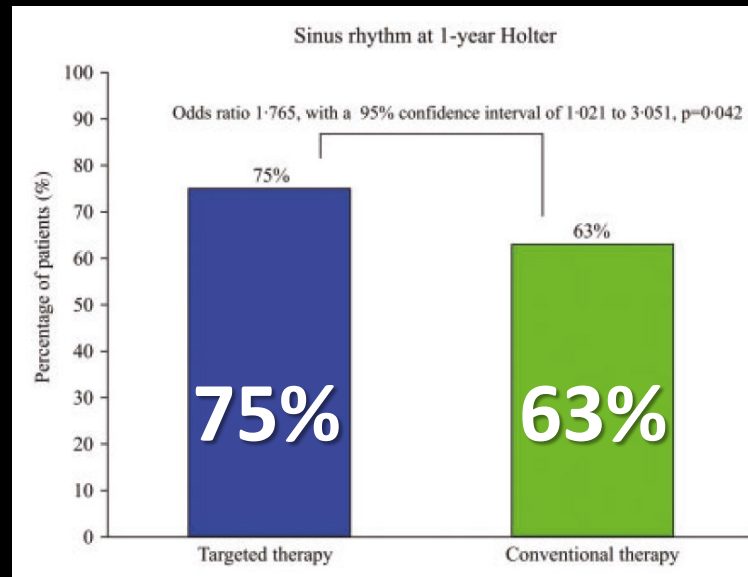




# Treatment underlying conditions – RACE3

Early symptomatic persistent AF, LVEF >25%, NYHA2-3, Rhythm control  
Targeted therapy (n=119) vs. Conventional (n=126)

- (i) MRA
- (ii) statins
- (iii) ACEi/BBlocker
- (iv) cardiac rehabilitation (physical activity, dietary restrictions, counselling)



- Repeat ECV: (67 [56%] vs. 64 [51%])
- AAD: 54 [45%] vs. 54 [43%]
- Ablation 3 [3%] vs. 2 [2%]
- Improved: RR, BMI (mild), NTproBNP, LDL, EHRA class

Targeted therapy of underlying conditions improves sinus rhythm maintenance in persistent AF



# Ratecontrole

## RACE II

RCT n=614

Target <80 vs <110 bpm

## Metaanalyse RCTs

n=17.378

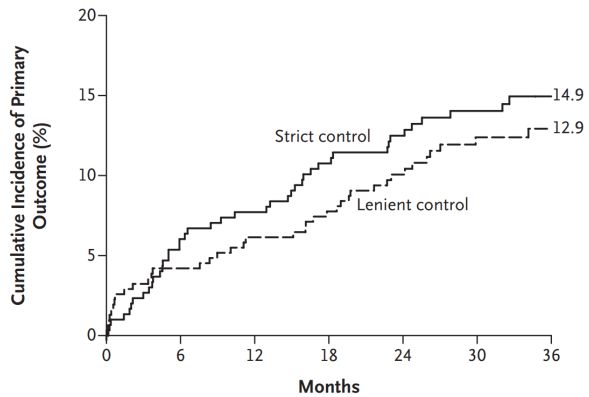
betablokkers in HF

# Betablokker of....?

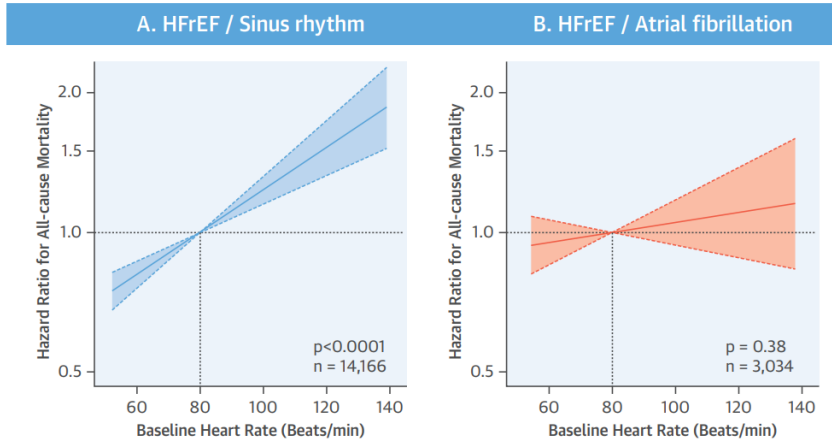
## RATE-AF

RCT n=160

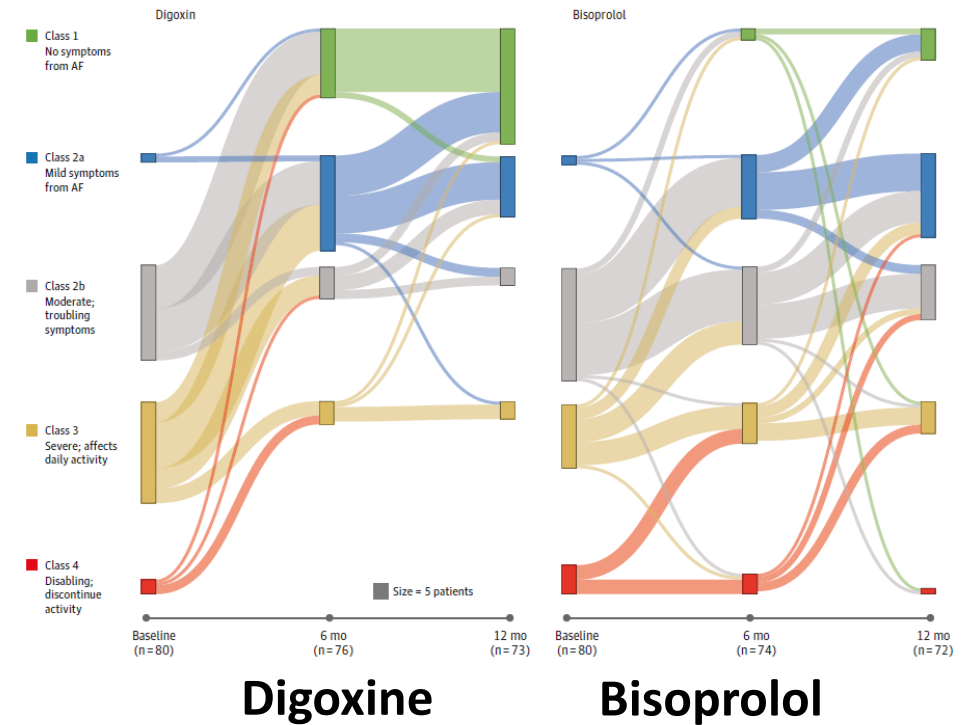
HF (>NYHA 2) en AF



CV Death, HF, embolie, bloeding, levensbedreigende ritmestoornis



mortaliteit

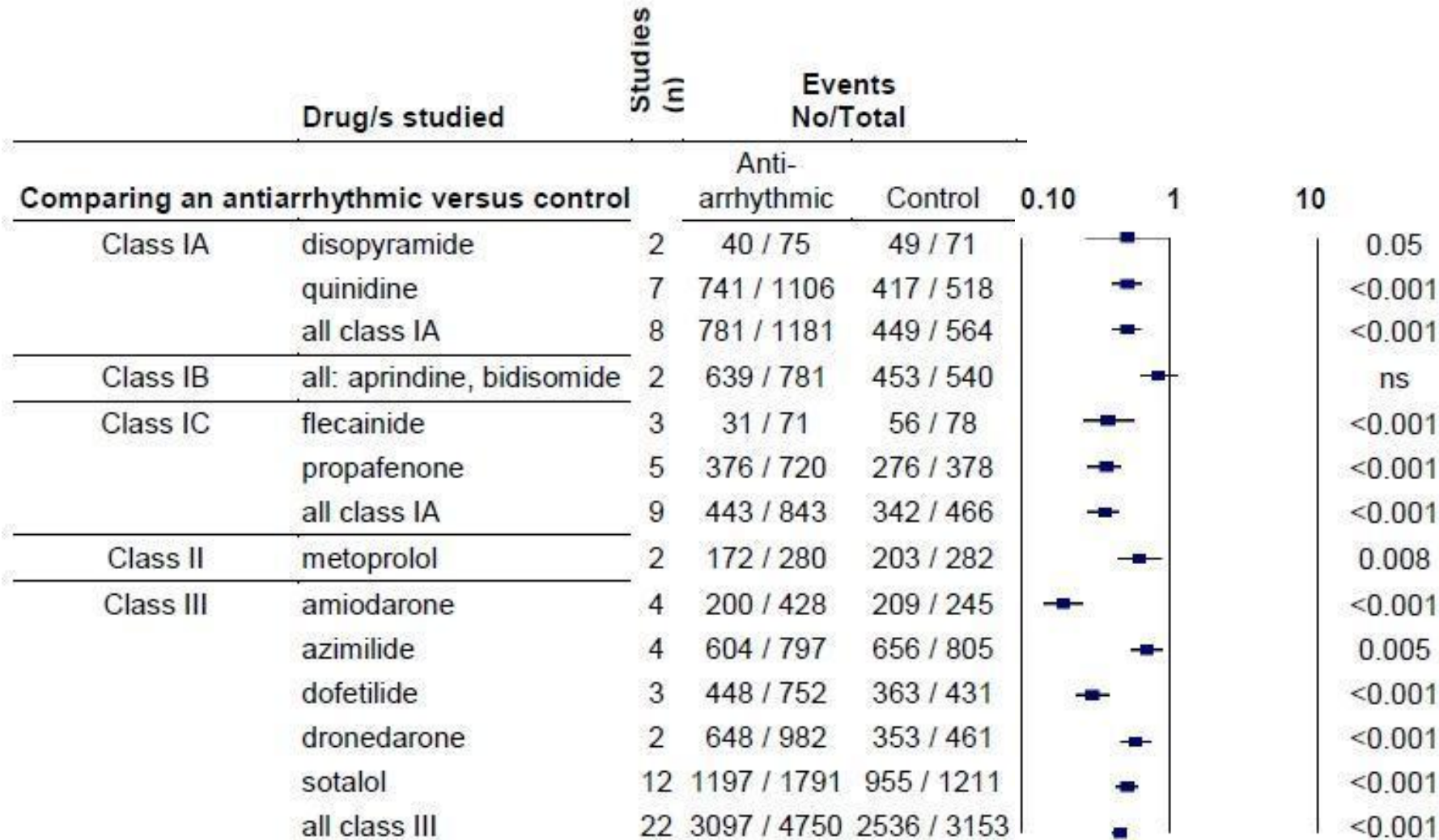
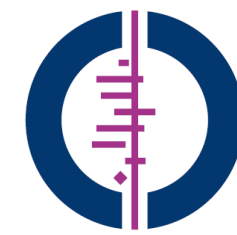


# Target <110bpm...?





# Ritmecontrole medicatie



## AF recurrence

Sotalol = 67%

Clas 1A = 66%

Metoprolol = 61%

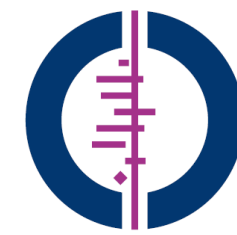
Class 1C = 53%

Amiodaron = 47%





# Drugs – AF recurrence



Drug/s studied	Studies (n)	Events No/Total					
		Drug A	Drug B	0.10	1	10	
<b>Comparing two antiarrhythmics</b>							
disopyramide <i>versus</i> other class I drugs	2	26 / 60	27 / 53				ns
quinidine <i>versus</i> flecainide	2	103 / 132	99 / 137				ns
other class I drugs	4	176 / 258	168 / 268				ns
sotalol	6	715 / 1109	556 / 869				ns
flecainide <i>versus</i> propafenone	2	49 / 145	56 / 152				ns
amiodarone <i>versus</i> class I drugs	5	142 / 311	229 / 332				<0.001
dronedarone	1	116 / 255	163 / 249				<0.001
sotalol	3	218 / 463	303 / 447				<0.001
sotalol <i>versus</i> class I except quinidine	4	150 / 243	157 / 251				ns
dofetilide	1	74 / 108	196 / 321				ns
beta-blockers	2	88 / 103	83 / 130				ns

**AF recurrence**

Sotalol = 66%

Class 1C = 52%

Amiodaron = 46%

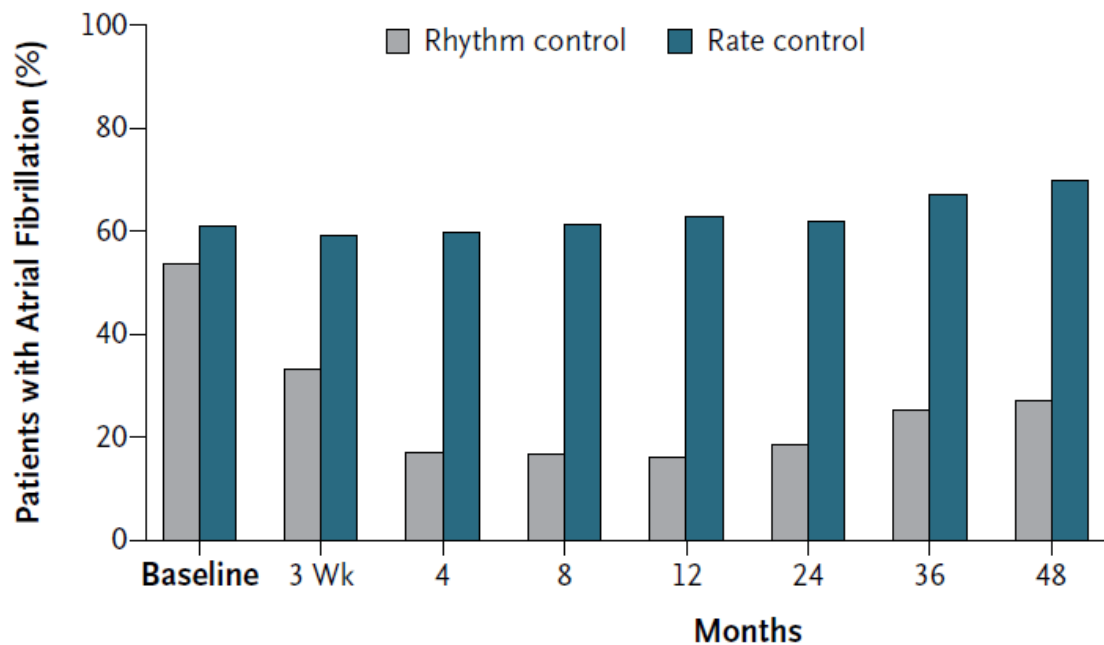




# Medicameneuze ritme controle in HF

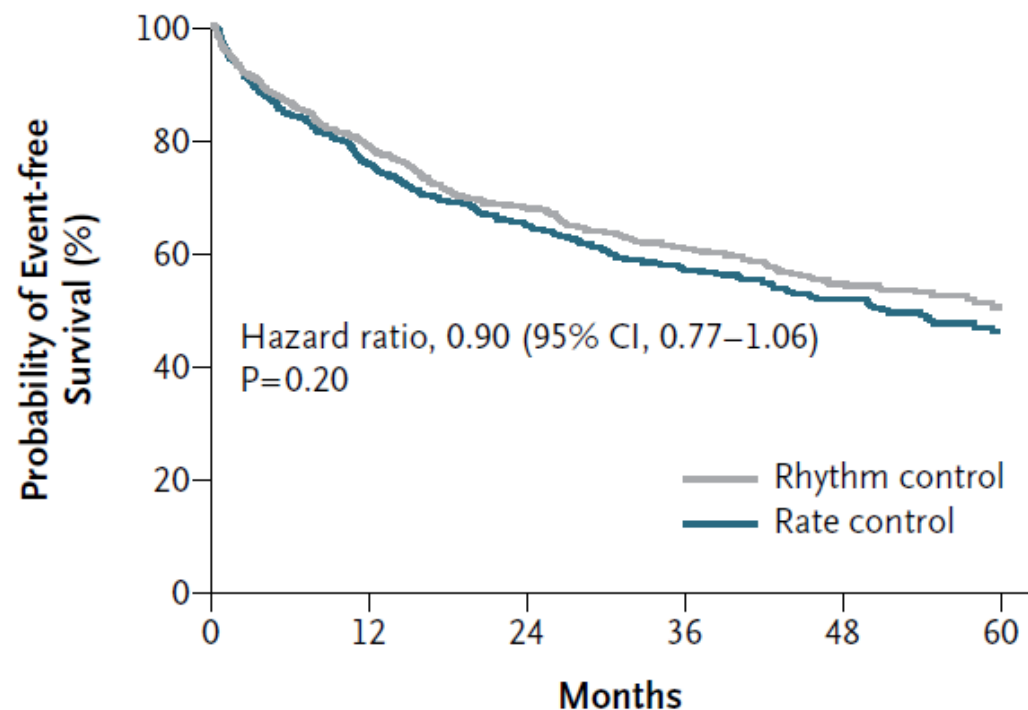
AF-CHF trial, LVEF <35%  
Ritme controle 682 vs. Rate controle 694

Follow-up Visits



Rhythm control 82% Amiodaron

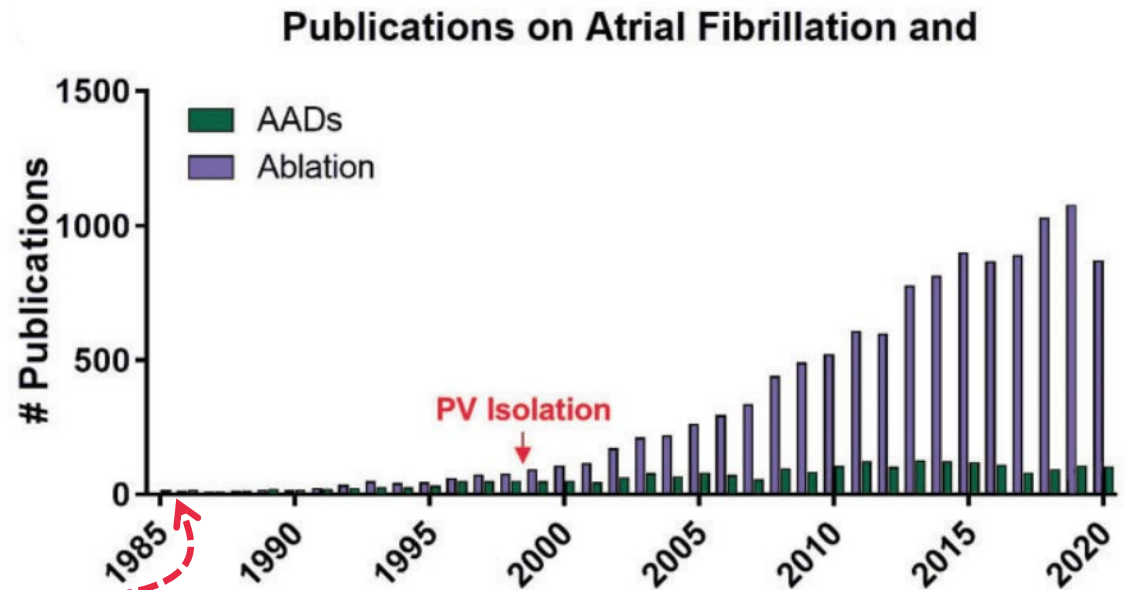
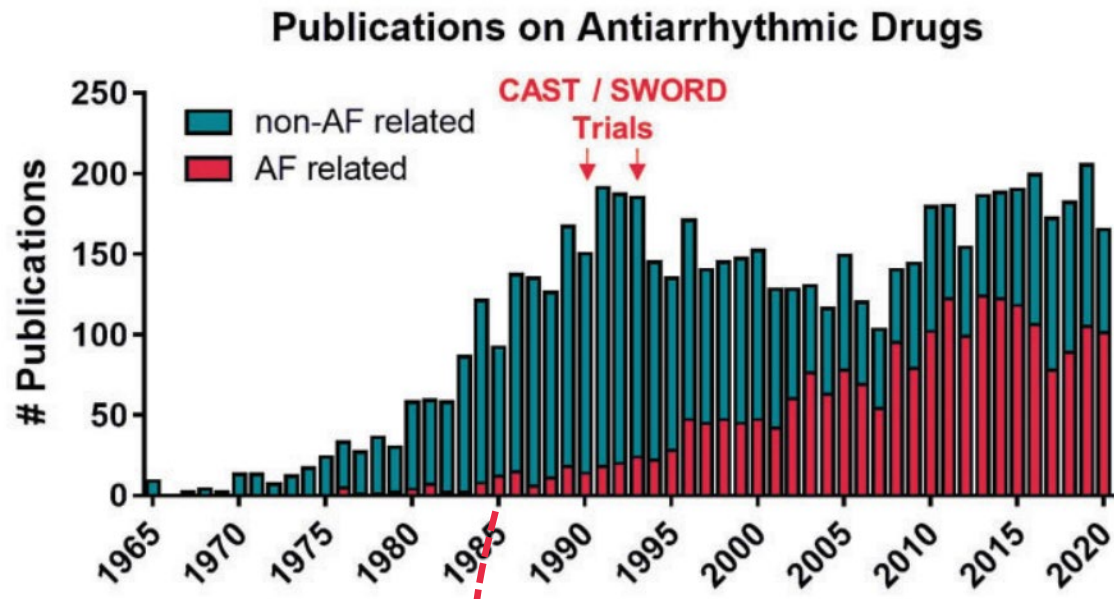
Composite Outcome



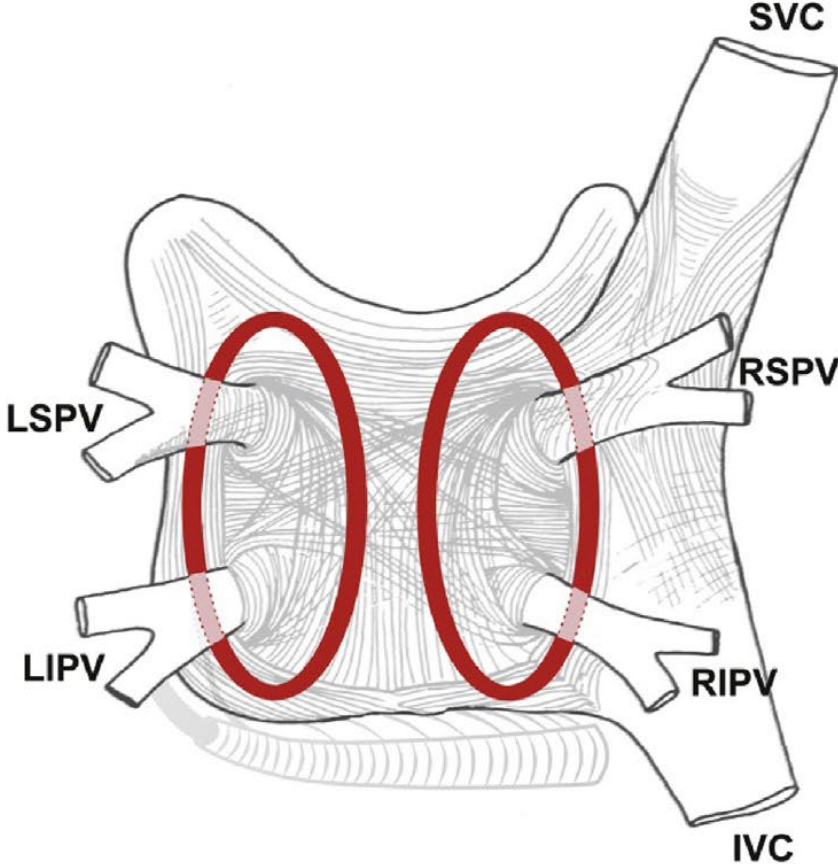
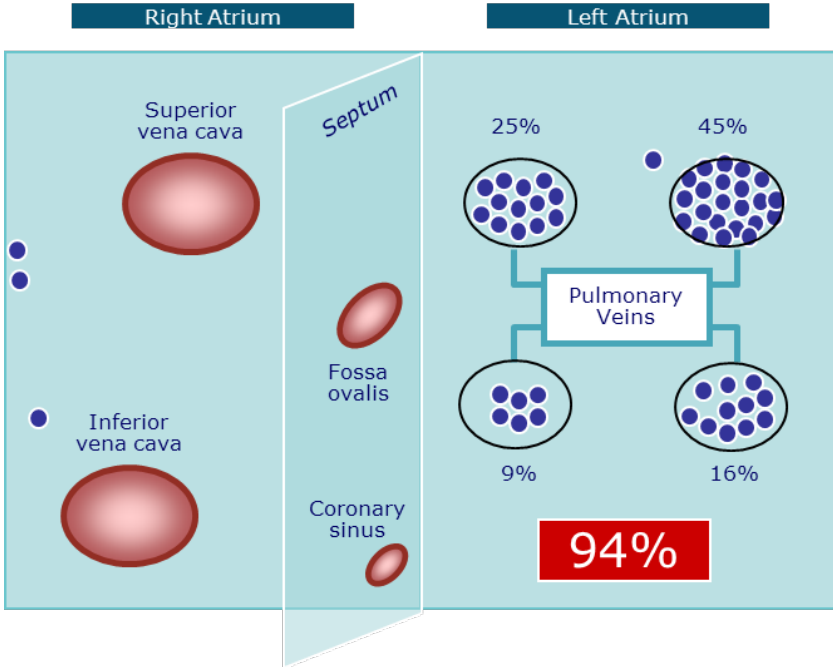
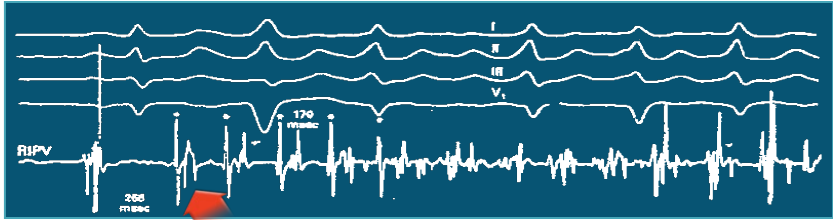
Ritmecontrole (amiodaron) GEEN verbetering uitkomst



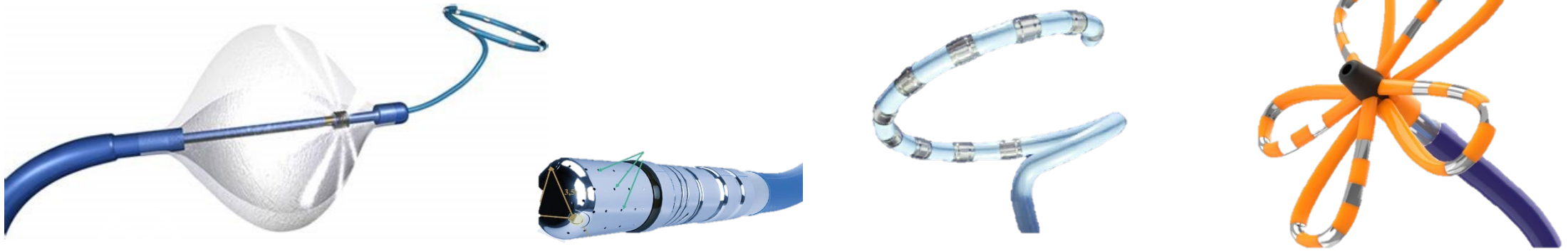
# What happened? 🤔



# AF ablation



# Techniek

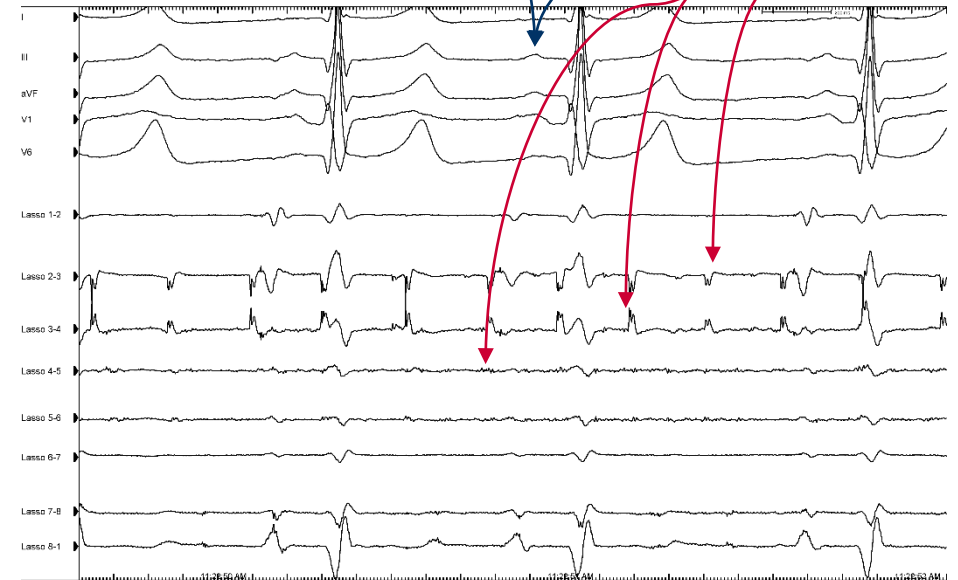
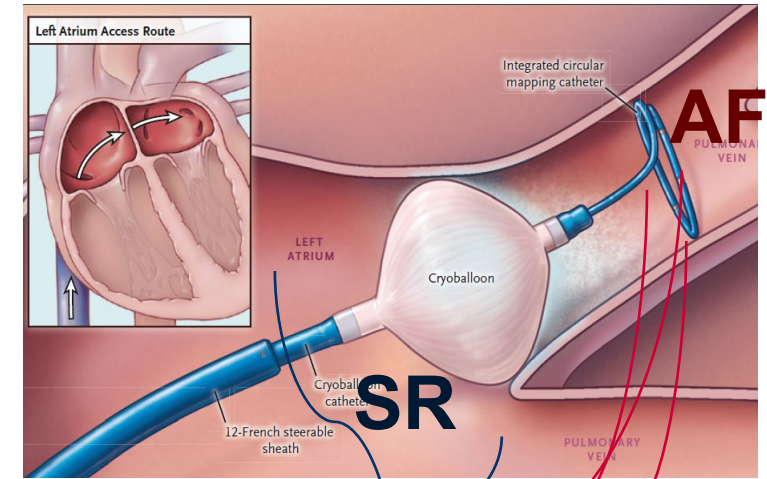
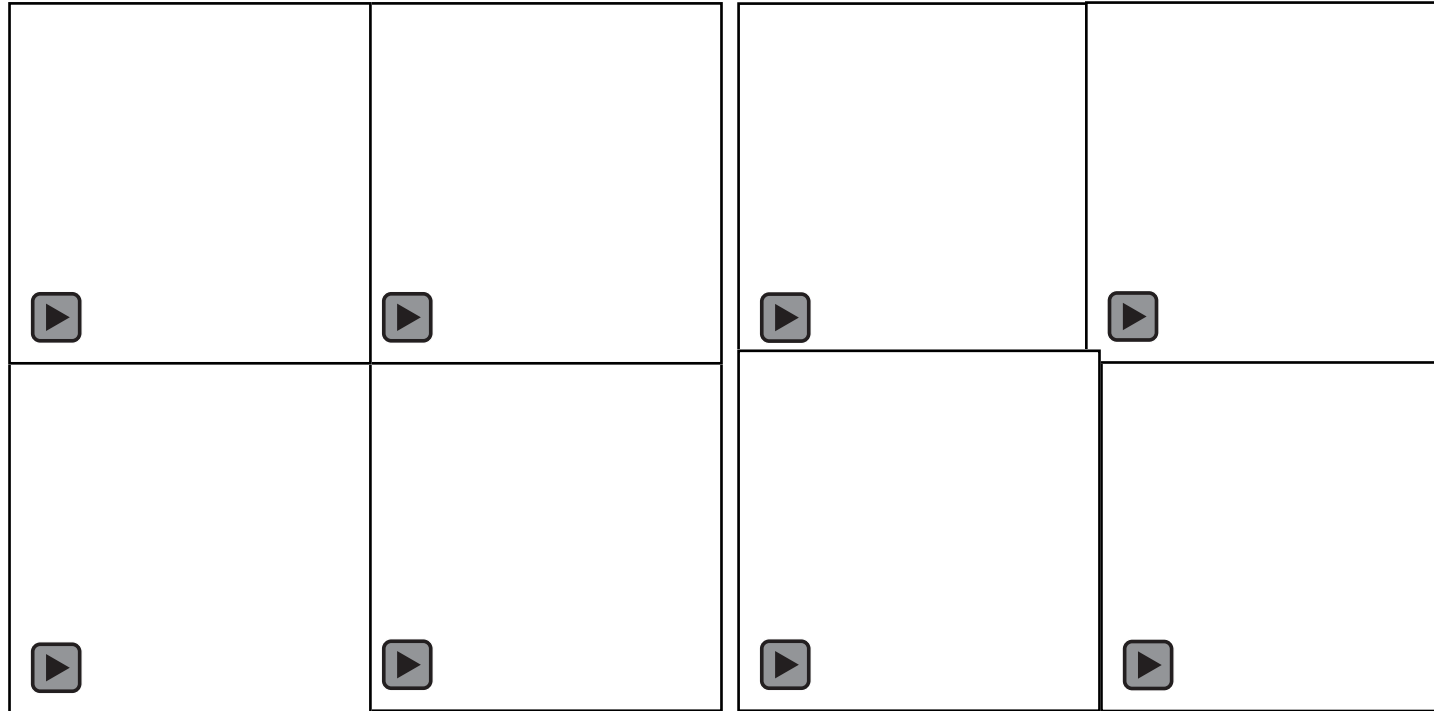




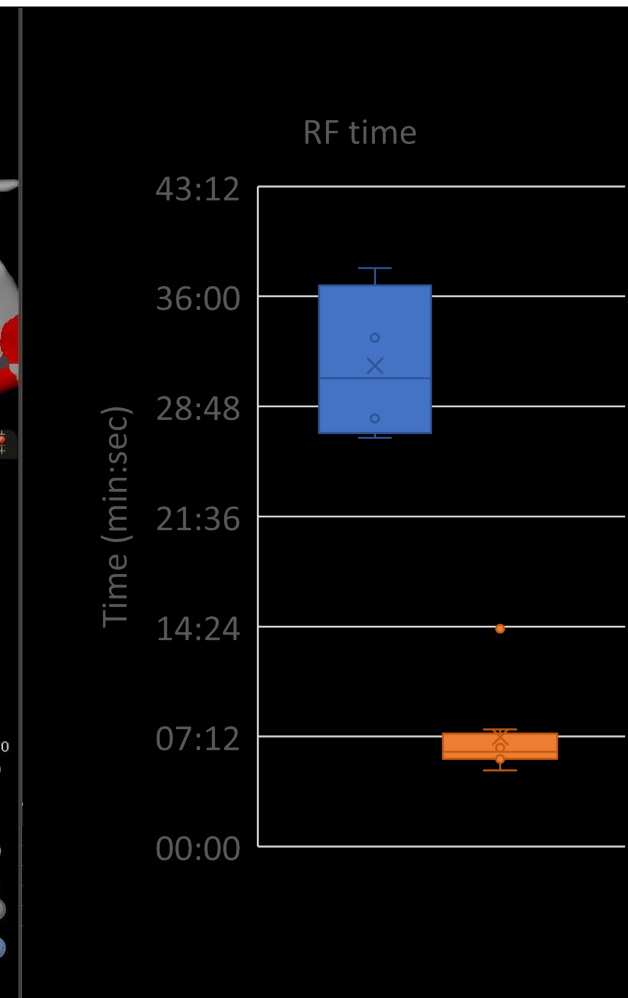
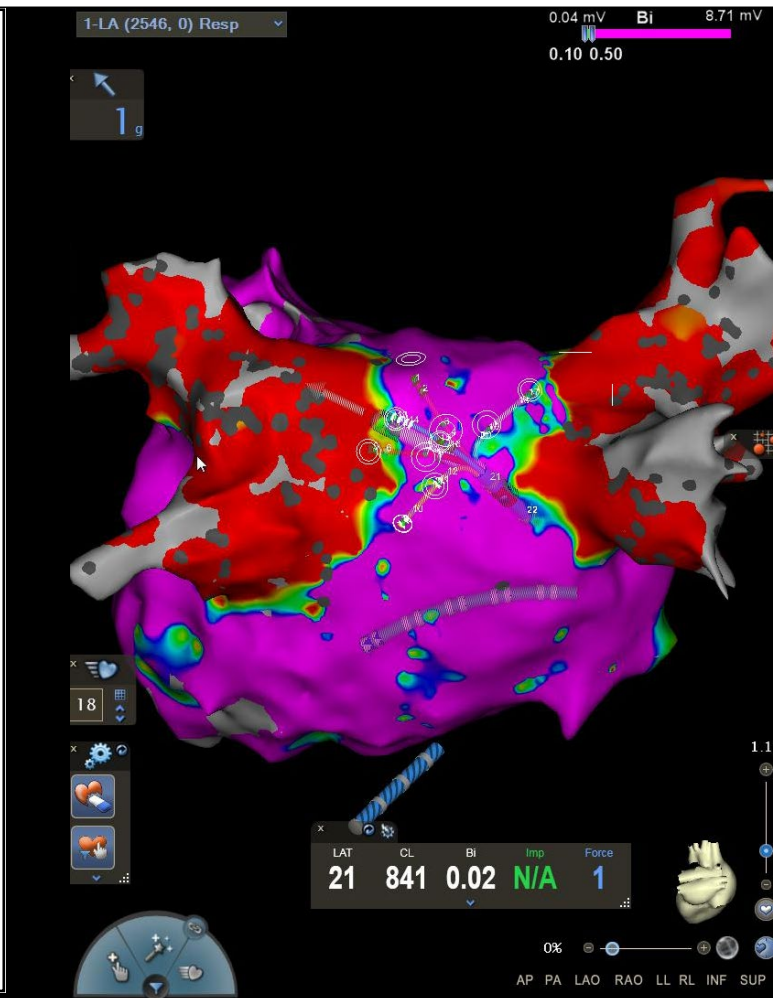
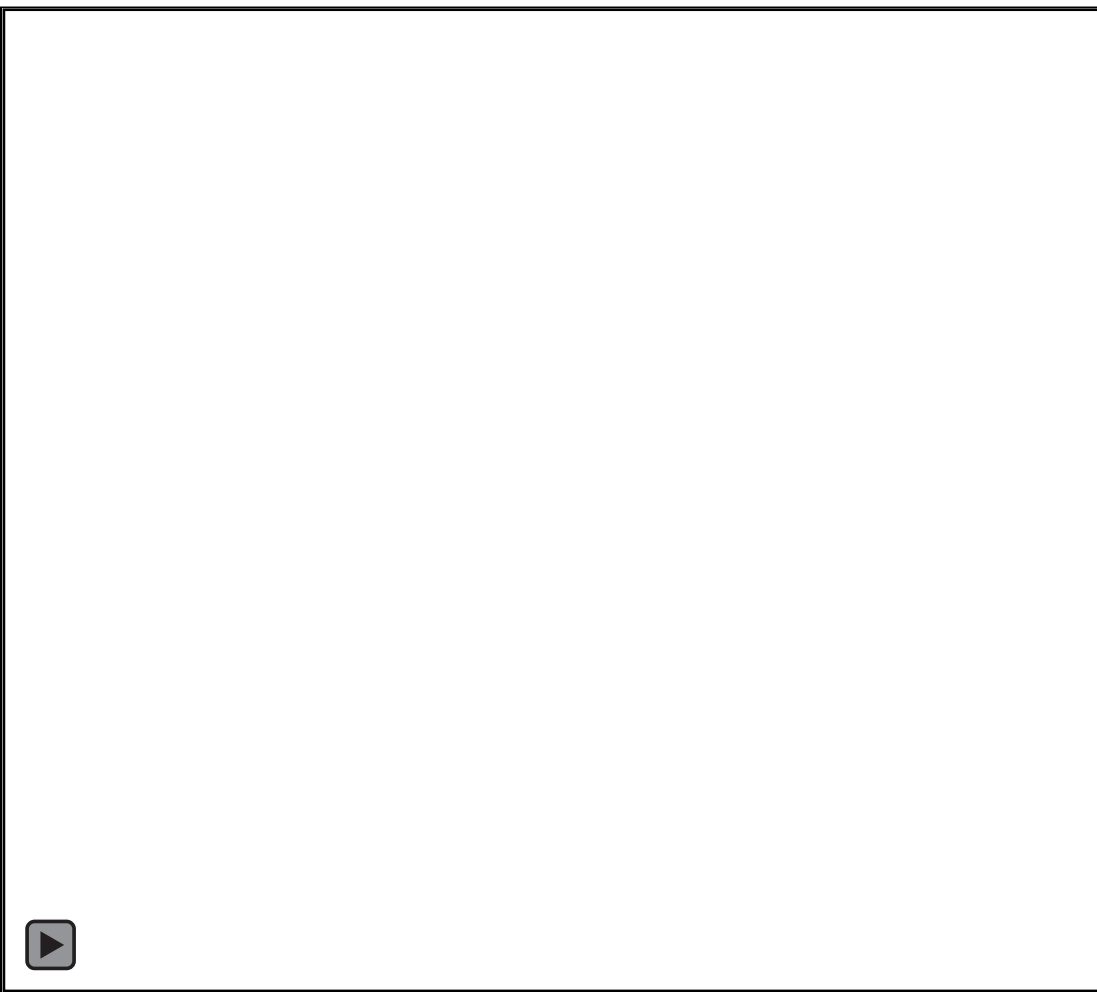
# Pulmonaal vene isolatie efficiënt, effectief, veilig

angiografie

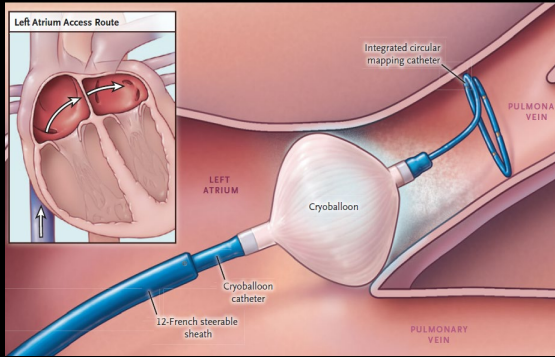
ablatie



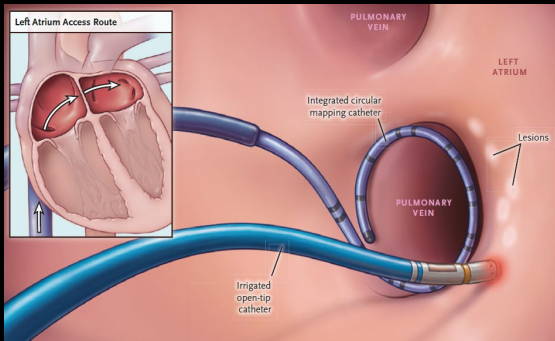
# PVI – efficient, safe, effective – vHSPD



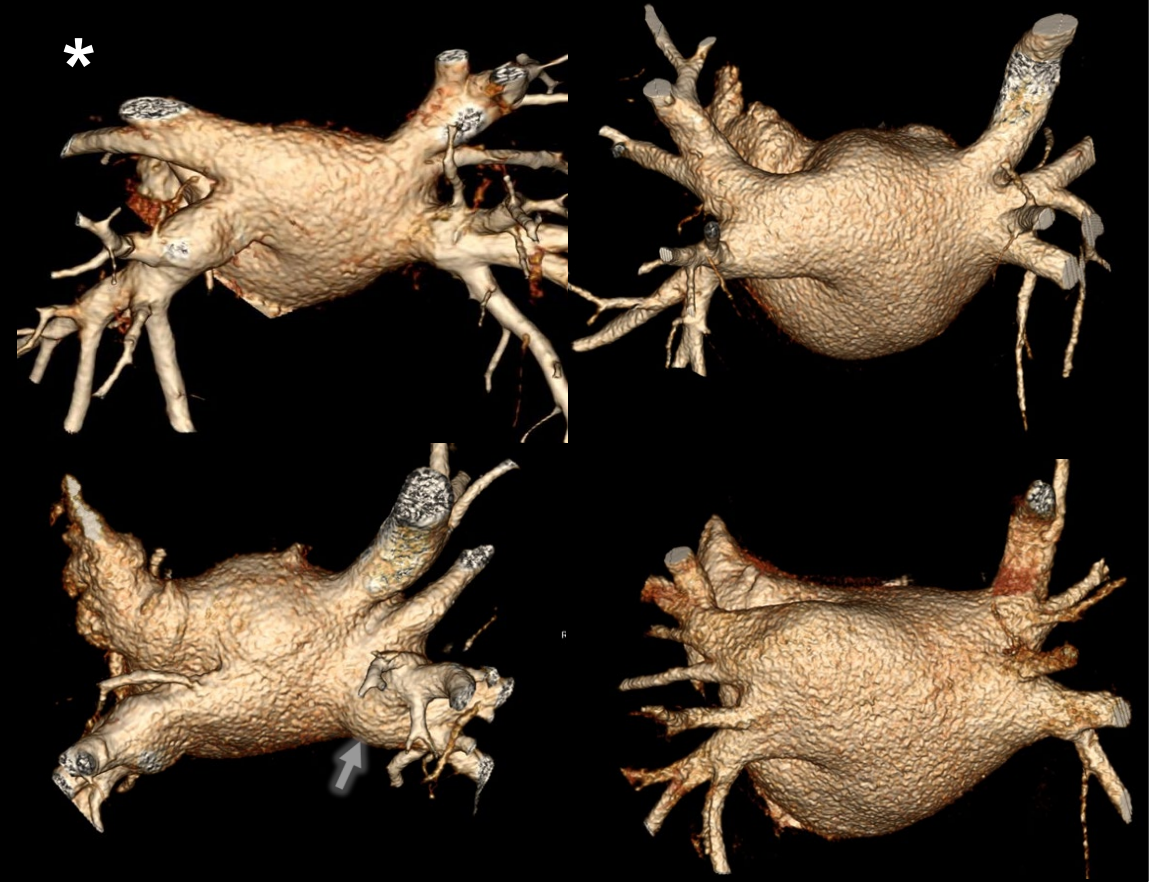
# AF ablatie – Cryoballoon vs. Radiofrequente energie



- + snel
- + wakker verdragen
- + homogene laesie
- niet flexibel

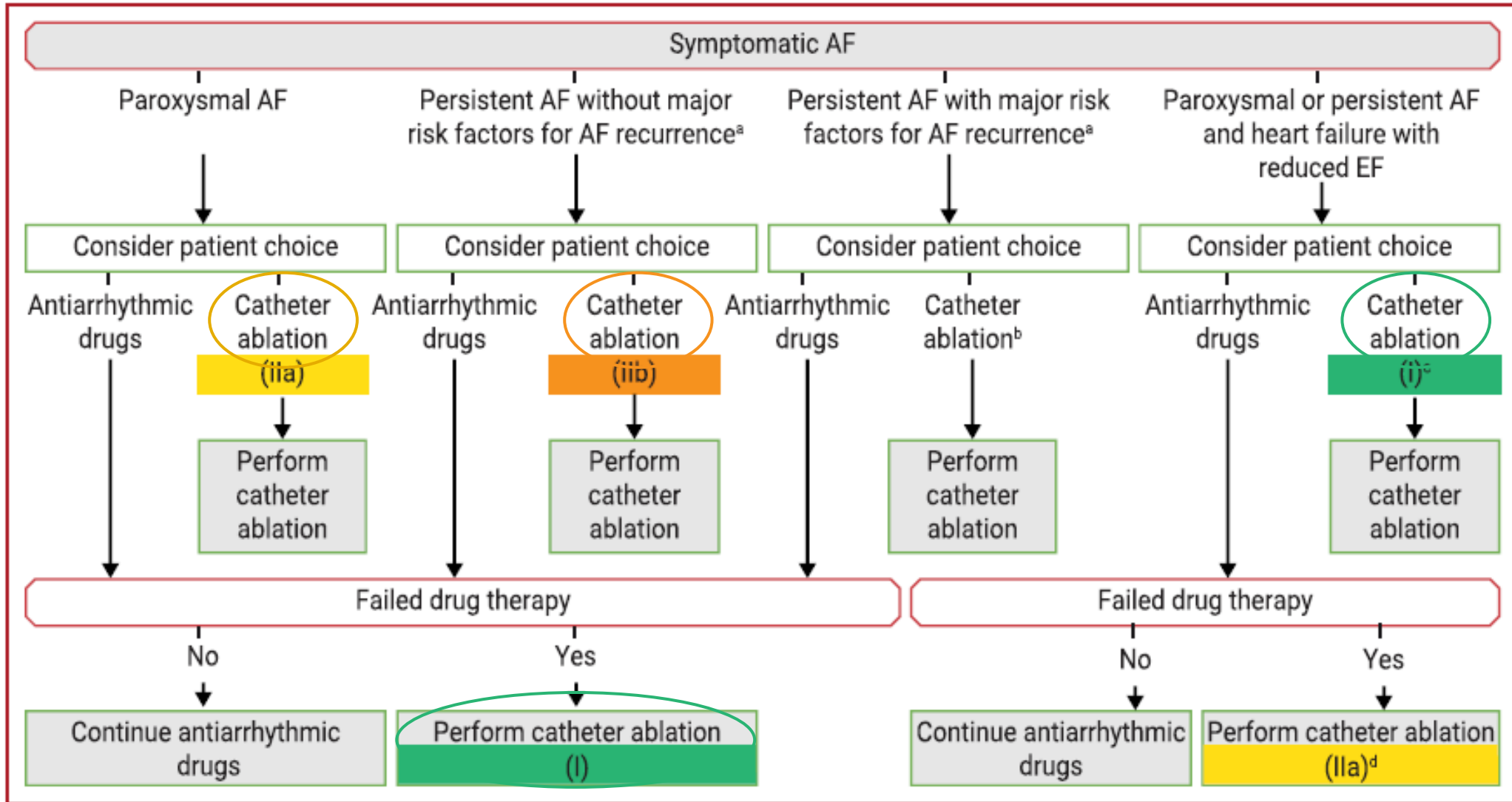


- + iedere anatomie
- + opties voor laesies
- pijnlijk
- meer operator skill



= effectiviteit (parox AF 78%) / = veiligheid (ander profiel)

# Indicaties



©ESC 2020



# Ablatie + risicofactor management!

ARREST-AF study n=149

BMI >27 + 1 RF

AF-ablatie + RFMx (61) vergeleken – RFMx (88)

**RFMx**

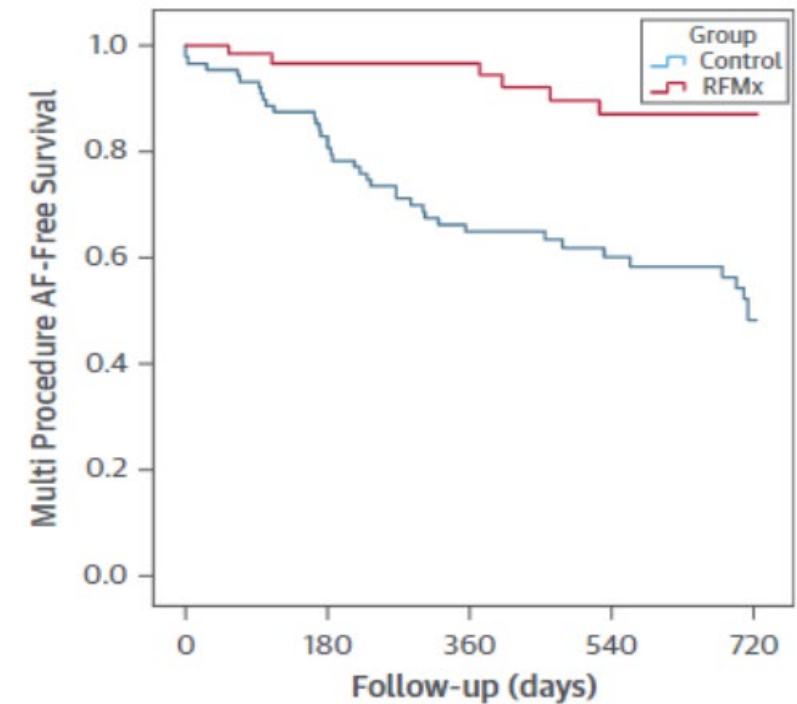
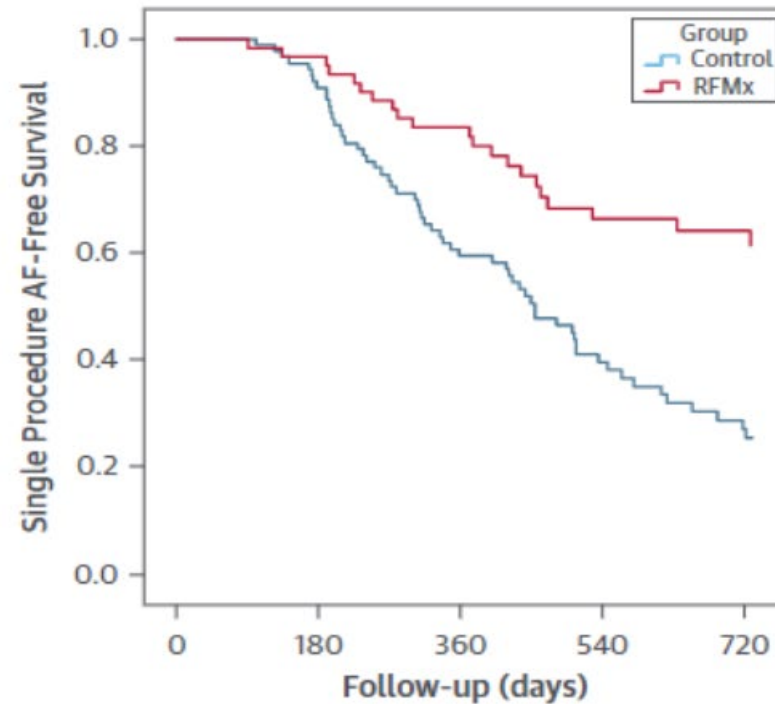
Gewicht

Glucose

OSAS

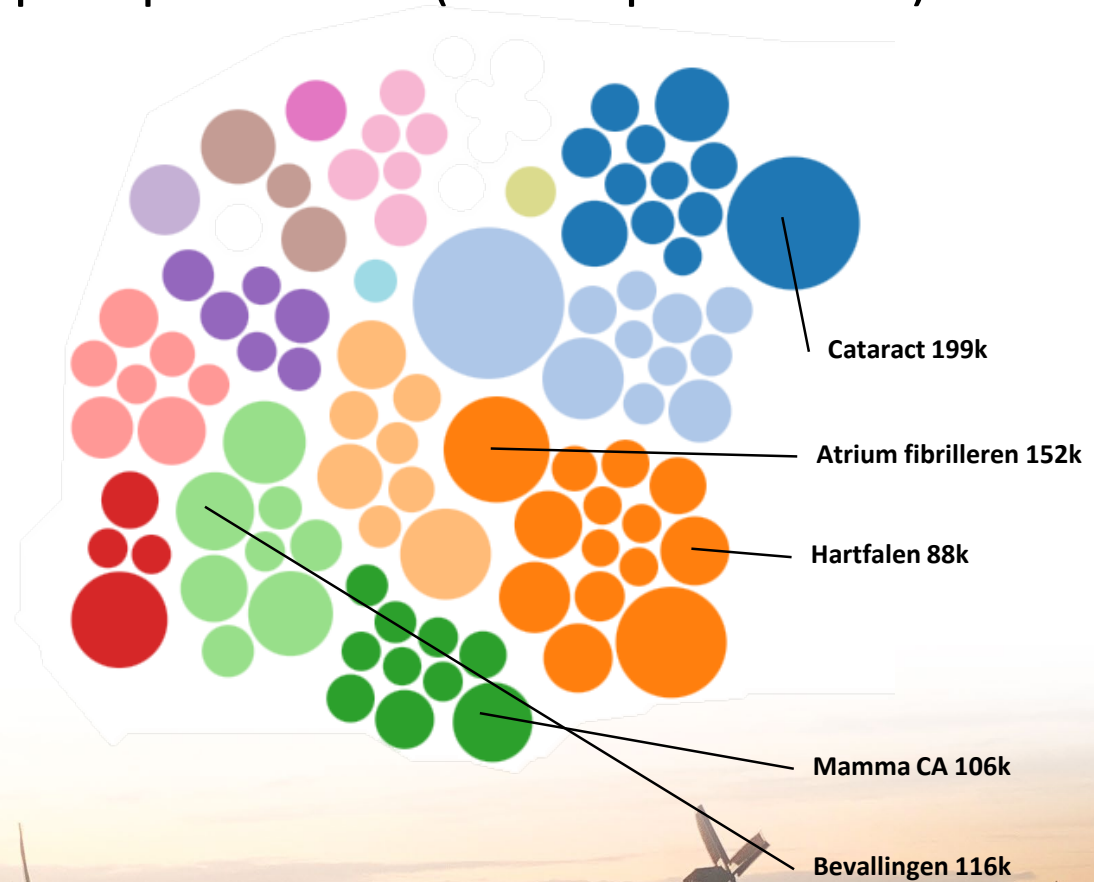
Bewegen

Alcohol (+roken)



## Top 10 diagnose per specialisme (aantal pts in 2021)

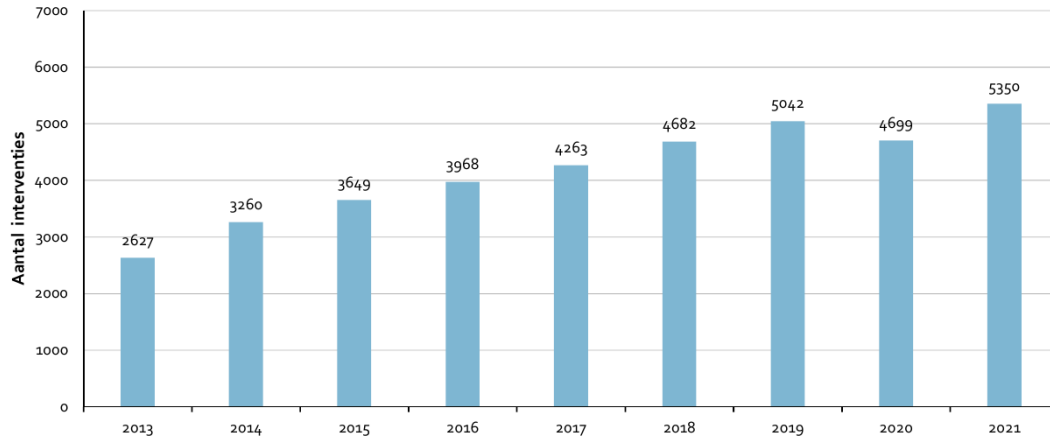
- Dermatologie en Venerologie
- Oogheelkunde
- Cardiologie
- Orthopedie
- Keel-, neus- en oorheelkunde
- Obstetrie en gynaecologie
- Chirurgie (Heelkunde)
- Urologie
- Kindergeneeskunde
- Longziekten
- Reumatologie
- Gastro-enterologie
- Interne geneeskunde
- Neurologie
- Audiologische centra
- Geriatrie
- Anesthesiologie
- Overig/alle specialismen



# AF ablatie | NL

Figuur 1. Atriumfibrilleren - Katheterablatie - aantal interventies per jaar

Bron: NHR



Tabel 2. Atriumfibrilleren - Katheterablatie - ruwe uitkomsten per jaar

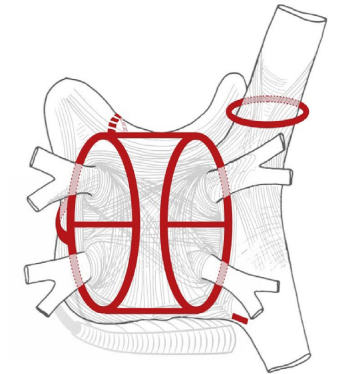
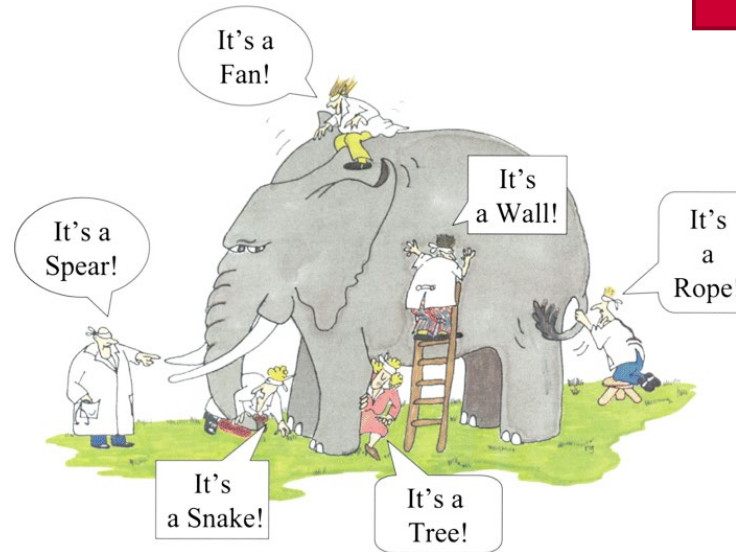
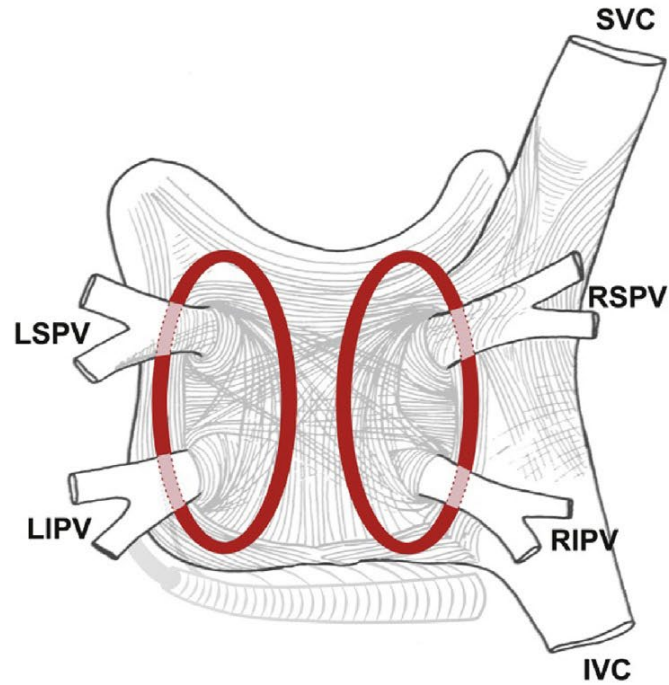
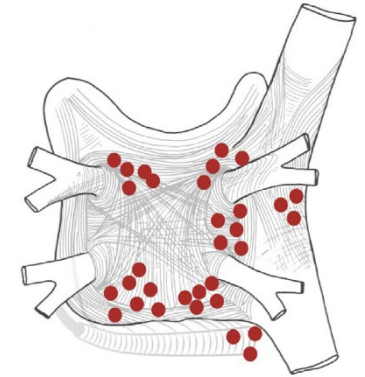
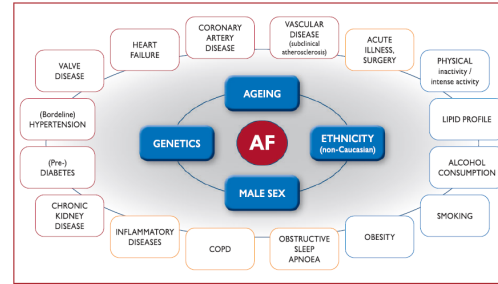
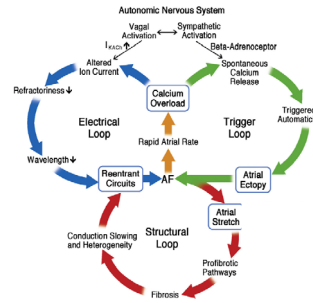
Bron: NHR



	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bloedingscomplicatie tijdens opname	1,1%	0,7%	0,7%	0,5%	0,7%	0,4%	0,6%	0,4%	0,5%
Cardiale tamponade binnen 30 dagen	0,6%	0,6%	0,6%	0,2%	0,5%	0,6%	0,4%	0,4%	0,2%
Phrenicus paralyse	-	-	-	0,6%	0,8%	0,8%	0,8%	0,6%	1,0%
Trombo-embolische complicatie binnen 72 uur	0,5%	0,1%	0,5%	0,2%	0,5%	0,3%	0,2%	0,2%	0,3%
Vasculaire complicatie binnen 30 dagen (minor + major)	-	-	-	1,3%	1,6%	1,4%	1,5%	1,4%	1,4%
Herhaalde linkeratriumablatie binnen 1 jaar	19,3%	18,3%	18,4%	17,9%	16,7%	18,5%	14,4%	14,2%	-



PVI ± 75-80% succes



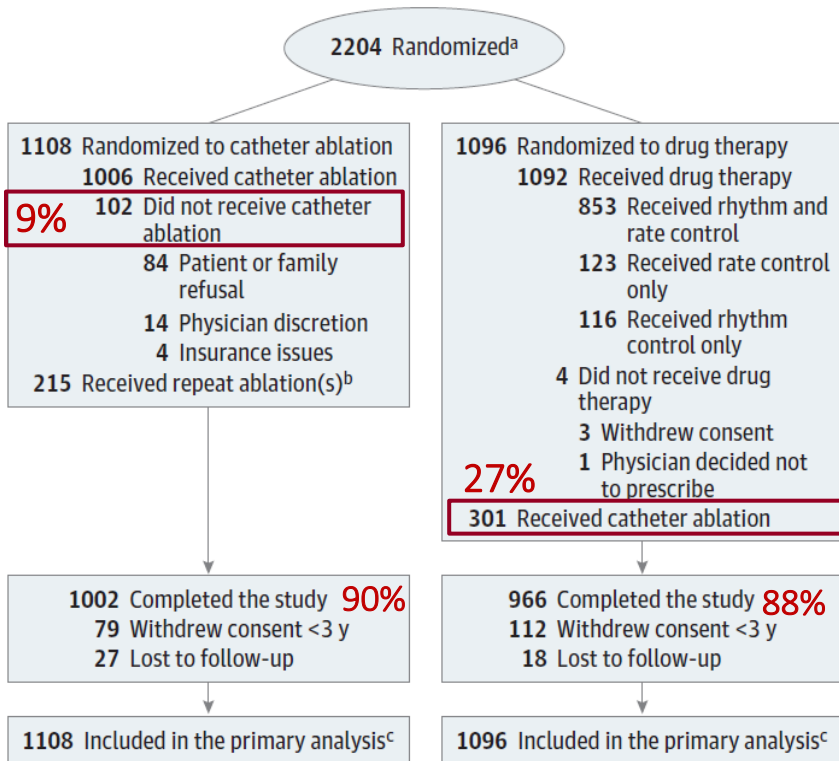




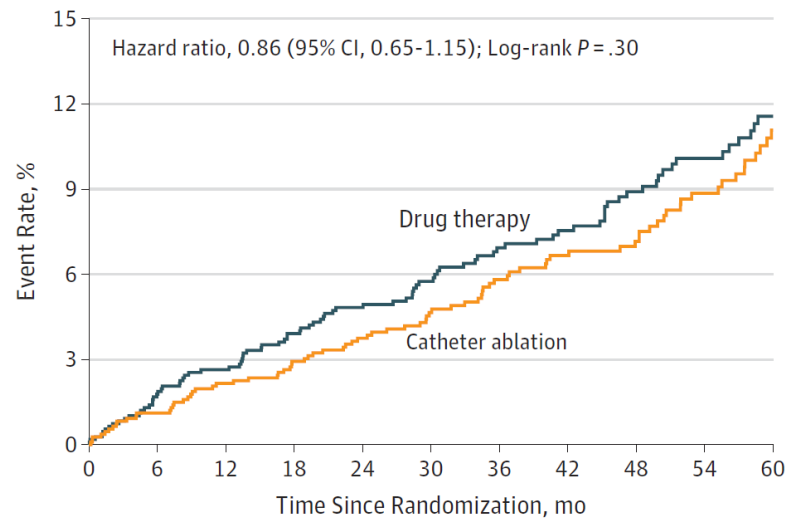
Monthy Python, 1975

# AF ablatie en uitkomst

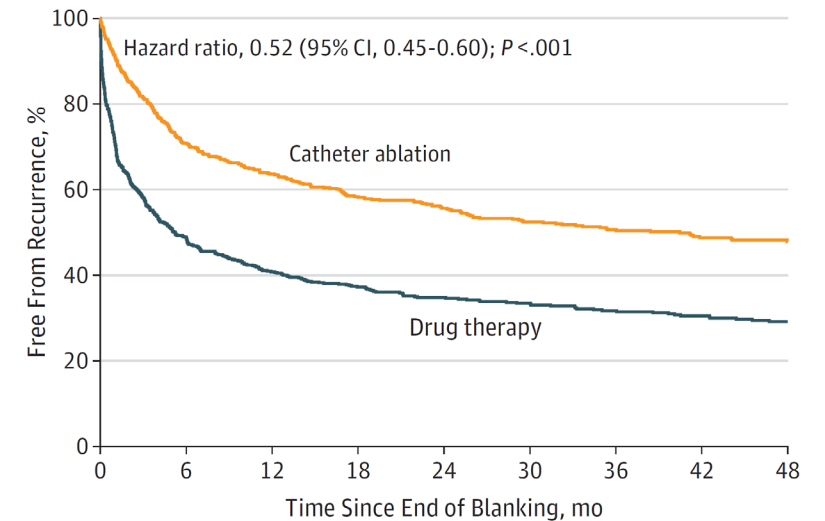
CABANA n=2204 AF  
n=1108 ablatie vs. n=1096 medicatie



death, disabling stroke, serious bleeding, or cardiac arrest



AF herhaling



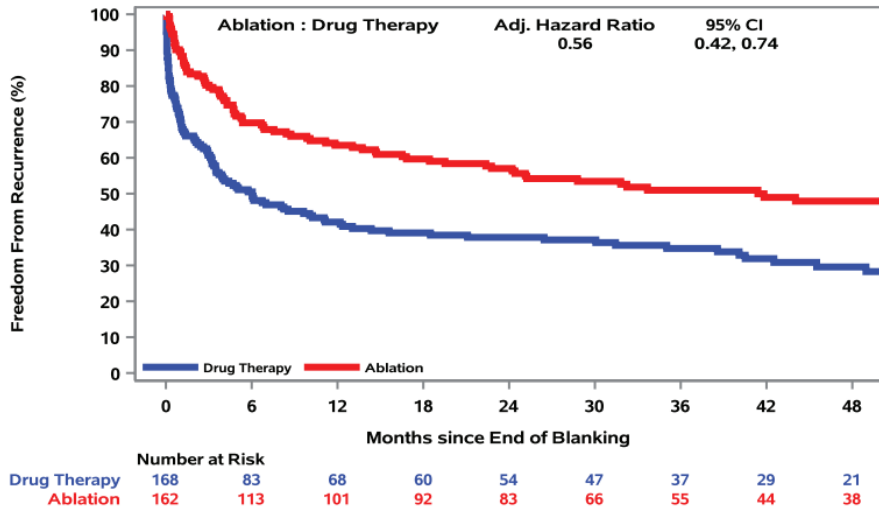
AF ablatie – geen significant betere uitkomst, minder AF.

# AF ablatie in Hartfalen- CABANA

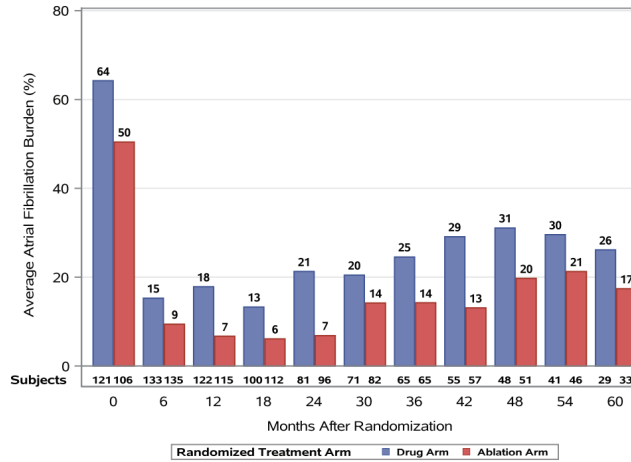


CABANA n=2204 → NYHA 2-4 = 778  
HFpEF in 80%

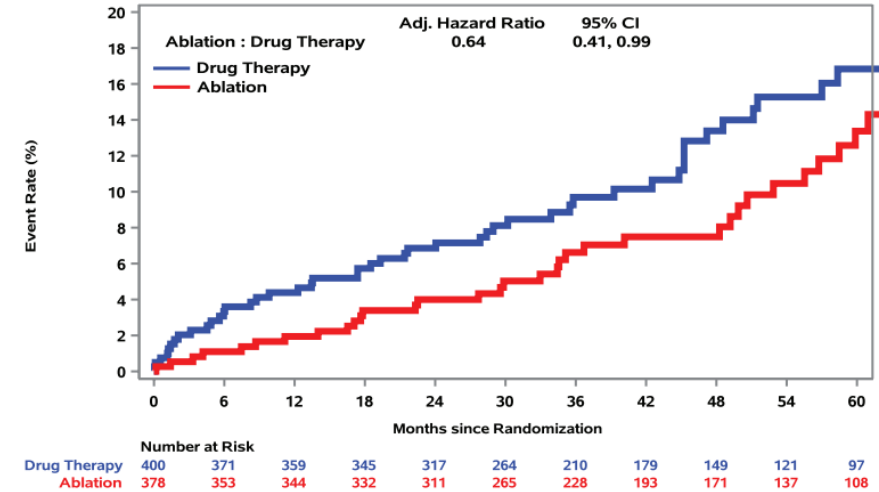
AF herhaling



Gemiddelde AF burden



death, disabling stroke, serious bleeding, or cardiac arrest



HF(p)EF – AF minder AF en betere uitkomst

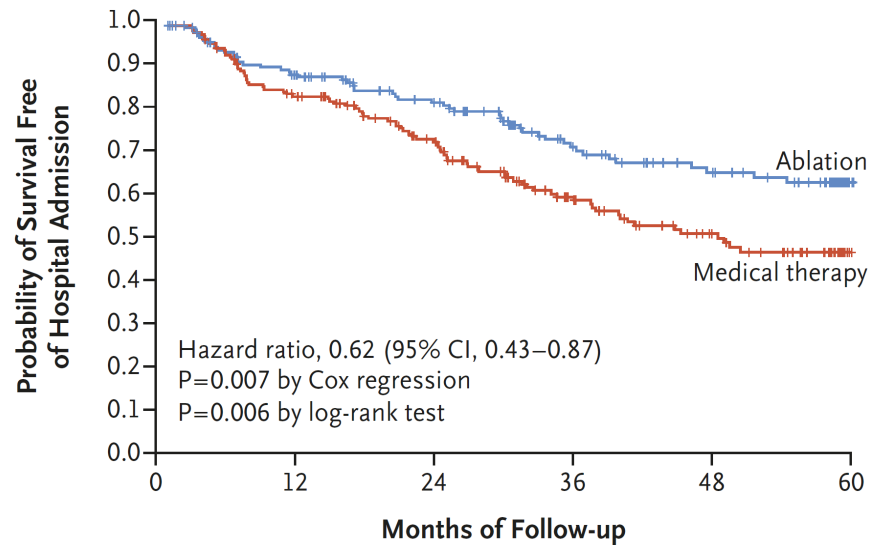
# AF ablatie in patienten met HFrEF

CASTLE AF  
n=179 AF ablatie vs. n= 184 medicatie  
AF, NYHA >1, EF<36%, ICD, FU 37m

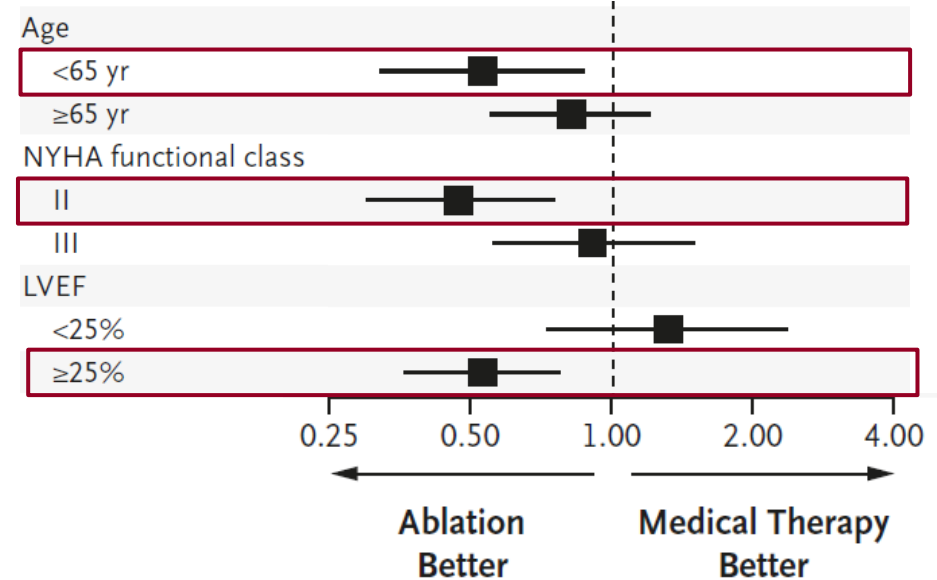


## Welke HF patient...?

Death or Hospitalization for Worsening Heart Failure

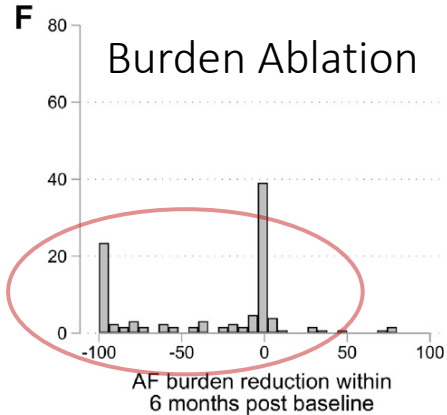
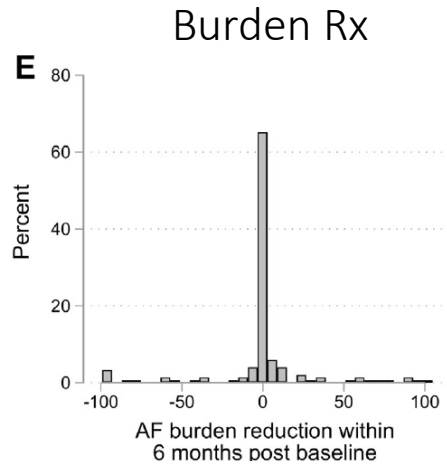


51 events [28.5%] vs. 82 events[44.6%];  
NNT 36 months: 8.3

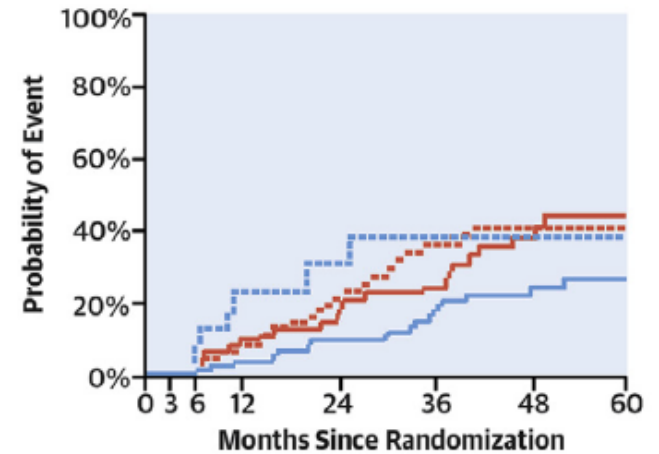
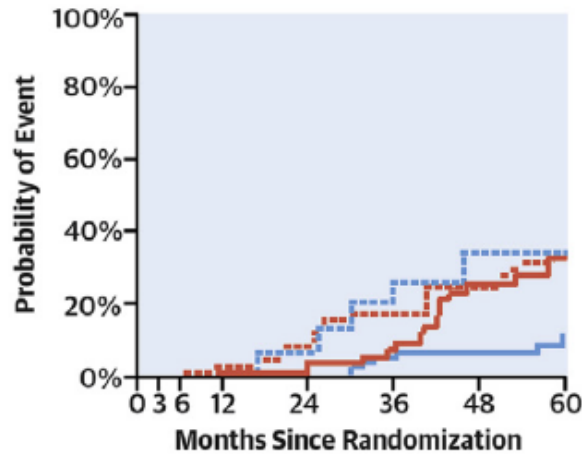
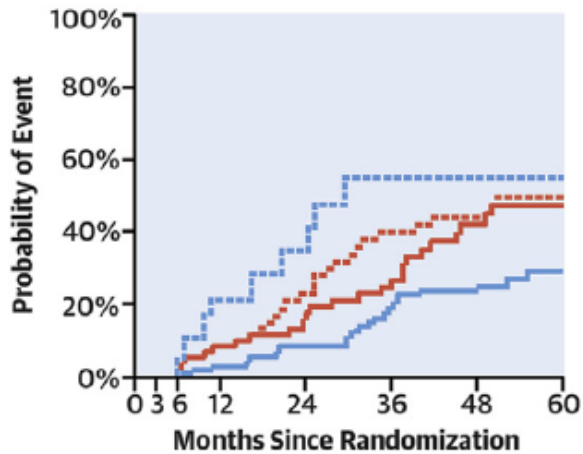


# AF ablatie in patienten met HFrEF - burden

CASTLE AF – as reated  
 n=128 AF ablatie vs. n= 152 medicatie  
 AF, NYHA >1, EF<36%, ICD, FU 37m



**A. Primary Endpoint**      **B. All-Cause Mortality**      **C. wHF Hospitalization**



AF burden at 6 months FUP <50%: Non-ablated — Ablated —      AF burden at 6 months FUP ≥50%: Non-ablated - - - Ablated - - -

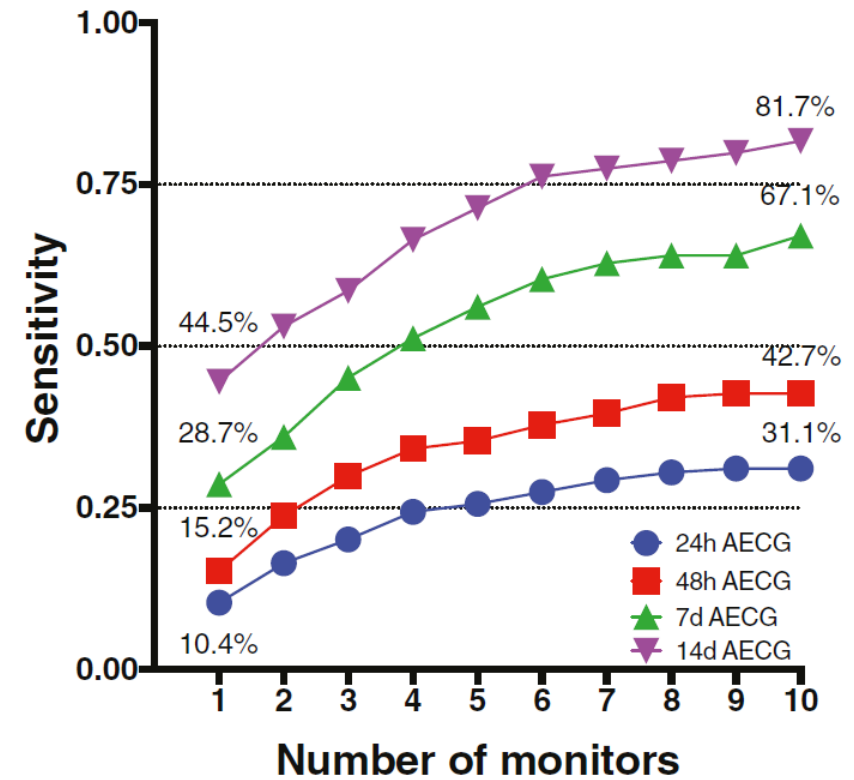
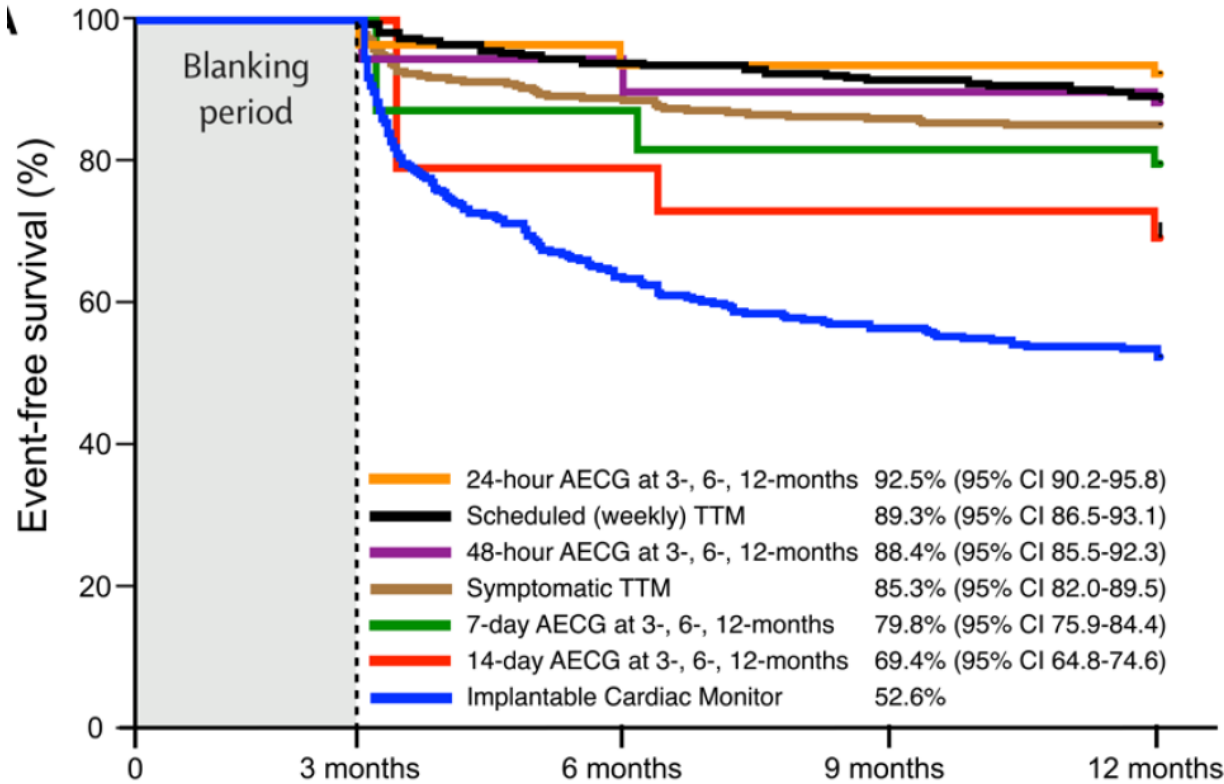
Brachmann, J. et al. J Am Coll Cardiol EP. 2021;7(5):594-603.

Low burden after ablation → better outcome



# Burden - AF monitoring

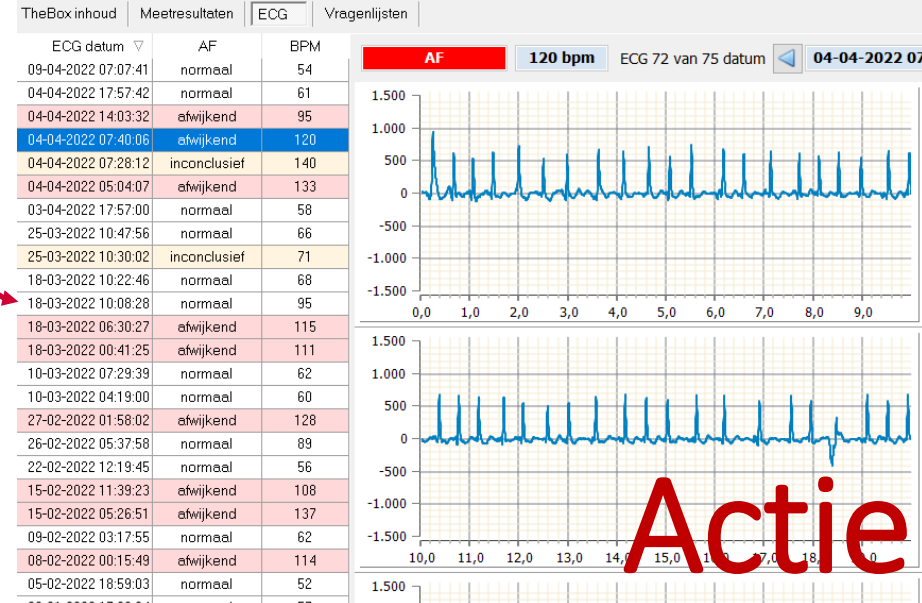
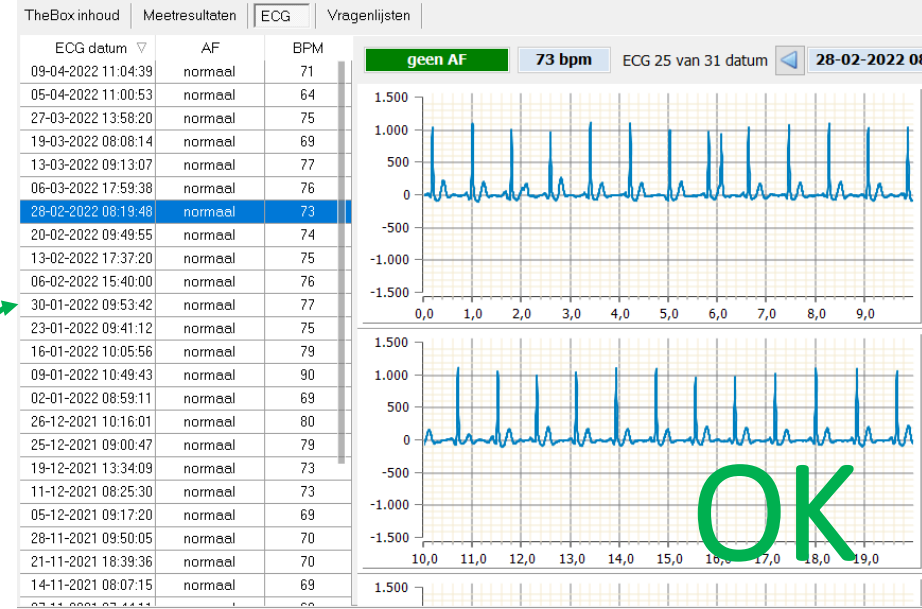
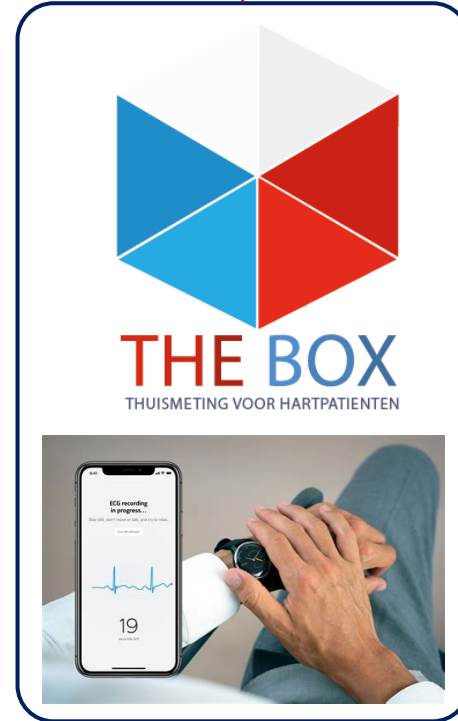
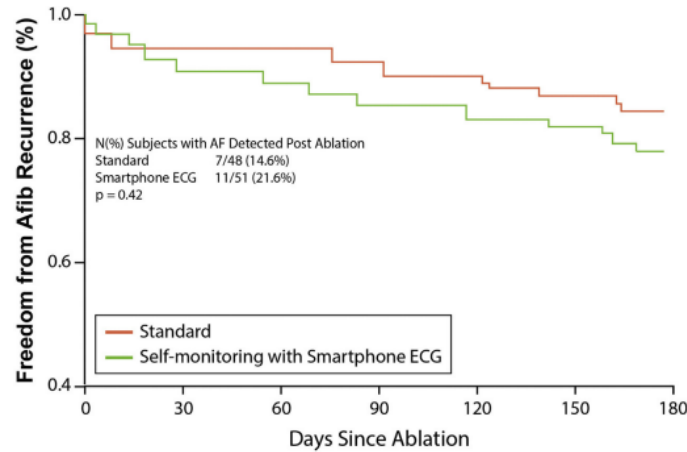
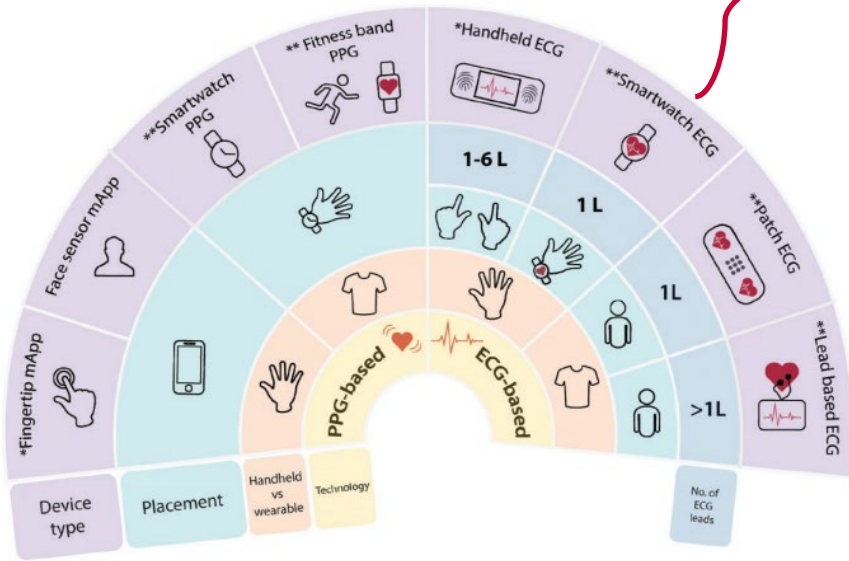
Data from CIRCA-DOSE  
 Cryo vs RF ablation parox AF (n=346)  
 ILR modelling other monitoring  
 (126290 days)



Duration of monitoring matters

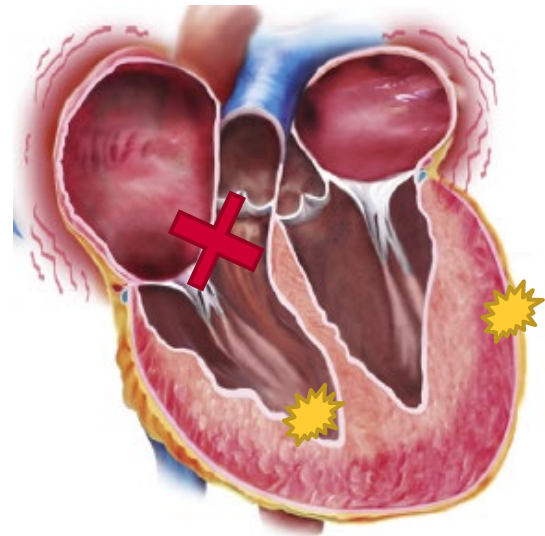
# AF monitoring – value of e-health

Digital Heart Rhythm Devices for the Clinic



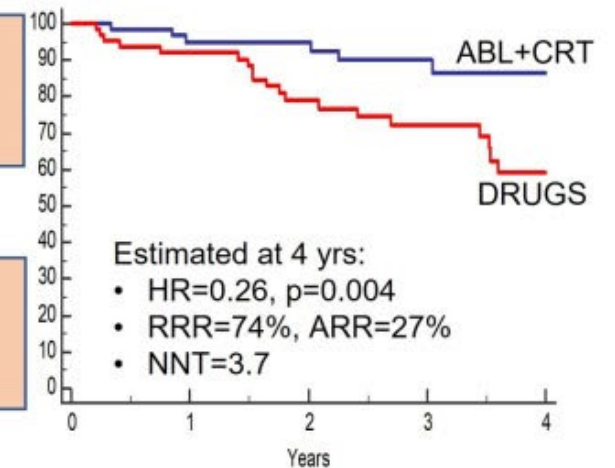
# Rate control in HF – de APAF CRT

AV junction ablation and cardiac resynchronization for patients with permanent atrial fibrillation and narrow QRS: The APAF-CRT Mortality Trial. *Brignole M et al.*



<b>133</b> pts with: • Permanent AF • Narrow QRS • ≥1 HF hospitalization • Severe symptoms	<b>63</b> Rate control <b>ABL+CRT</b>	HR = <b>70</b> bpm	<b>11%</b> (7 pts)
	<b>70</b> Rate control <b>DRUGS</b>	HR = <b>82</b> bpm	<b>29%</b> (20 pts)

\*Patients considered not suitable for ablation or failed



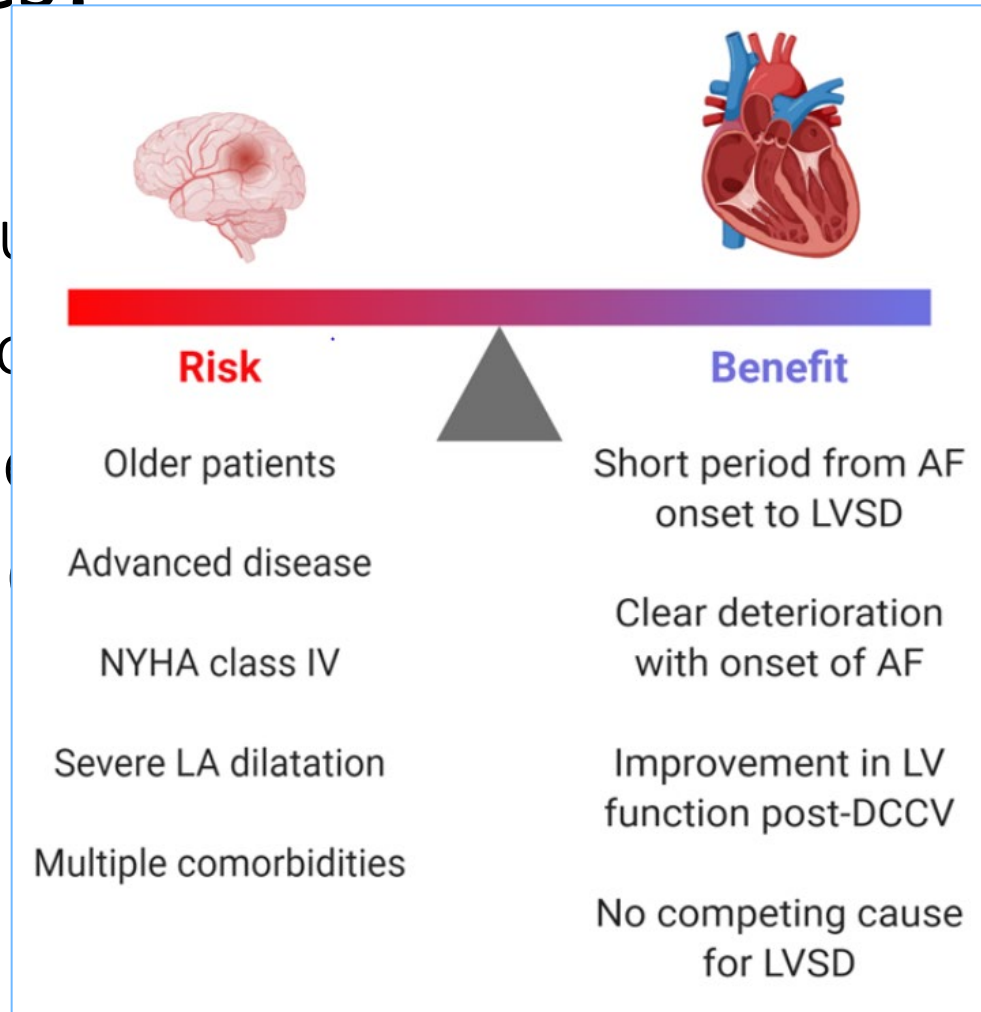
His ablatie + CRT = een geschikte optie voor geselecteerde patienten





# Medisch advies?

- A. Optimaliseren
- B. Medicamenteel
- C. Start Amiodaron
- D. Katheterablatie
- E. Upgrade naar



(T-2 inhibitor)  
(digoxine)





## RACE-8-HF

Randomized Trial

Vroeg invasieve methode

CRYO AF ablatie vs OMT

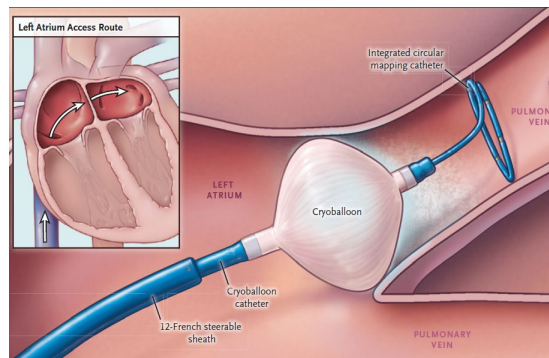
9 centra, 600 patienten

INCLUSIE LOOPT

### Representatieve populatie:

- 18 - 80 jaar
- HFrEF / HFmEF (LVEF  $\leq$ 50%)
- Gedocumenteerd AF (paroxysmaal of persisterend)
- Niet noodzakelijk ICD

### Eenduidige en veilige methode



### Klinische relevante eindpunten

- Primair: Mortaliteit / Ongeplande cardiovasculaire ziekenhuisopname/ CVA
- Secundaire o.a.: Kosteneffectiviteit, AF, HF, Ziekenhuis opname, QoL



### Principal investigators:

Vernooy (Maastricht UMC+)

Rienstra: (UMCG)

# Take home messages

- Hartfalen + atriumfibrilleren = een klinisch relevant probleem
- Ritmecontrole = belangrijke optie bij AF + HF
- Katheterablatie is invasief maar ook bij HF relatief veilig
- Katheterablatie mogelijk geassocieerd met verbeterde klinische outcome

