# The management of AF in 2022

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1) 2014 AHA/ACC/HRS Guidelines for the Management of AF
2) 2017 Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation
3) 2019 Focused Update on AHA/ACC/HRS Guidelines for the Management of AF

*www.acc.org* *www.hrsonline.org*

# The AF Epidemic

- 5-6 Million US patients
- Expected to double over next 25 years
- 500,000 new Dx/yr (US)
- Adds $26 B/yr to US healthcare costs
- Lifetime risk for adult age >40 = 1/4

*Andrade J, Circ Res. 2014;114:1453-1468.*
*Chiang C, Circ Arrhythm Electrophysiol. 2012;5:632-639.*
*January CT,. J Am Coll Cardiol. 2014; 64(21):e1-e76.*

# AF is bad

- 5X increase in stroke (inc w/ age)
- 2X increase in mortality
- 2X increase in dementia
- 3X increase in CHF
- 2X increase in hospitalizations
- 3X increase in multiple hospitalizations

*January CT,. J Am Coll Cardiol. 2014; 64(21):e1-e76.*

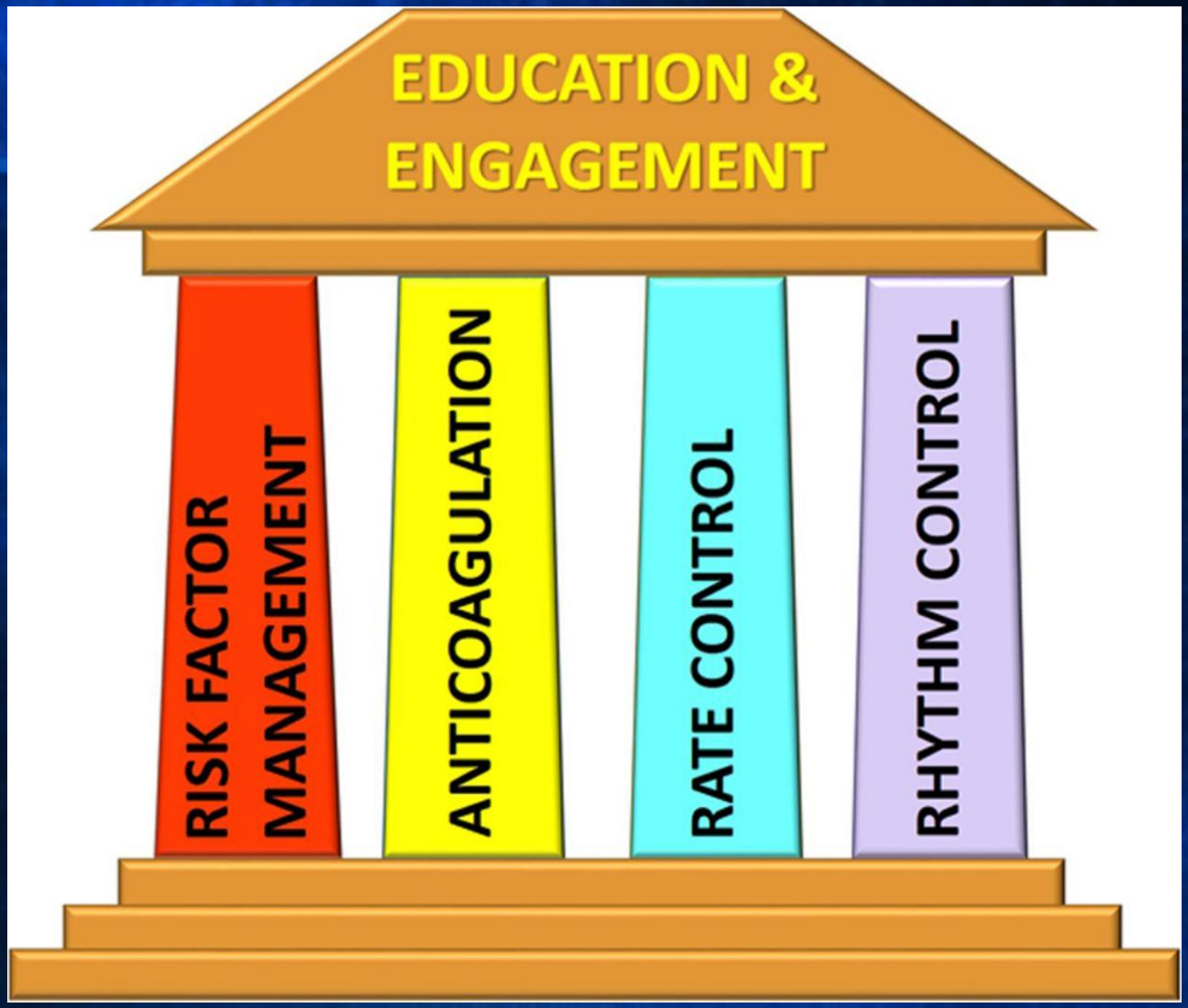
# AF is very frustrating for the patient, "low back pain of cardiology"

- Causes strokes… **"worst fear"**
- Makes pts feel **BAD**
- Therapy **toxic** and **ineffective**

# 68 y/o M w/ 7 yrs PAF and 1 yr persistent AF

- refractory to multiple medications including amiodarone
- Remains symptomatic ( DOE) after 1 year “trial of rate control”
- Obesity 5’10”, 280# (BMI 40.2),DM, Htn,

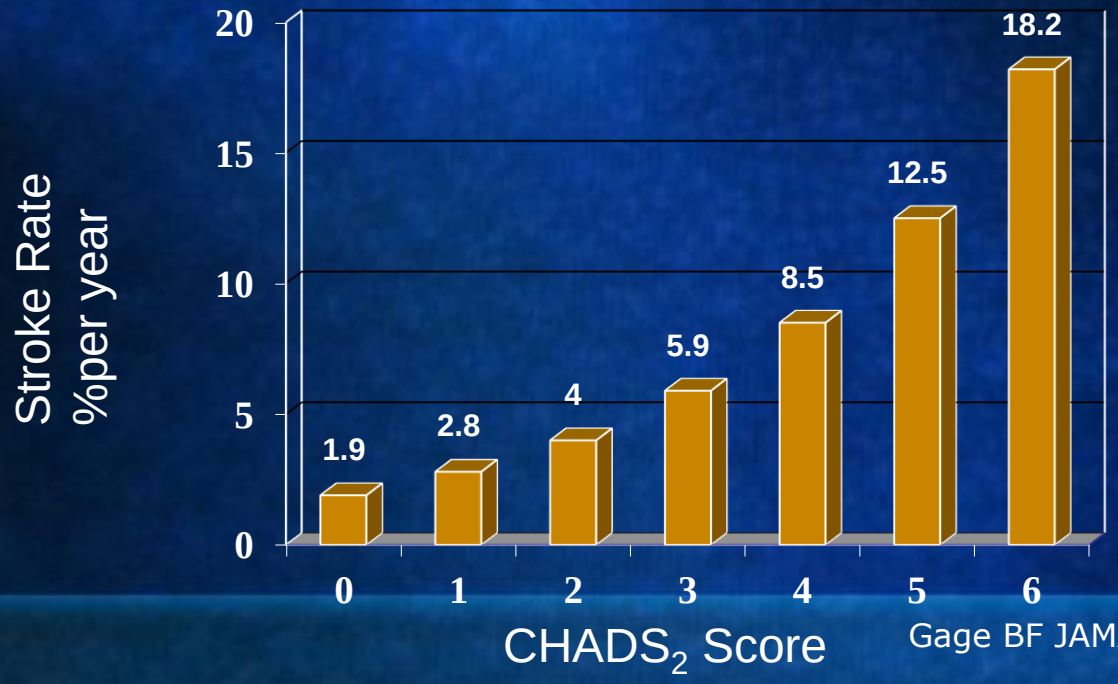
# AF




Lau, DH, et,al. Modifiable Risk Factors and Atrial Fibrillation, Circulation 2017; 136: 583-596

# Stroke Risk in Patients With Nonvalvular AF Not Treated With Anticoagulation According to the $CHADS_2$ Index

| $CHADS_2$ Risk Criteria | Score |
|---|---|
| Prior stroke or TIA | 2 |
| Age >75 y | 1 |
| Hypertension | 1 |
| Diabetes mellitus | 1 |
| Heart failure | 1 |




Gage BF JAMA 285:2864-2870,2001

## CHADS2

- CHF
- Hypertension
- Age > 75
- Diabetes
- Stroke/TIA (2)

## CHADS2 VASC

- CHF/LV dysfunction
- Hypertension
- Age > 75 (2)
- Diabetes
- Stroke/TIA/TE (2)
- Vasc disease
- Age > 65
- Sex (female)

*Gage BF JAMA 285:2864-2870,2001*

*Lyp GYH Chest 137:263-272,2010*

# Stroke risk comparison

| CHADS2 (n=1733) | Stroke rate %/year |
|---|---|
| 0 | 1.9 |
| 1 | 2.8 |
| 2 | 4.0 |
| 3 | 5.9 |
| 4 | 8.5 |
| 5 | 12.5 |
| 6 | 18.2 |

| CHADS2-VASc (n=7329) | Stroke rate %/year |
|---|---|
| 0 | 0 |
| 1 | 1.3 |
| 2 | 2.2 |
| 3 | 3.2 |
| 4 | 4.0 |
| 5 | 6.7 |
| 6-9 | 9.8-15.2 |

# Direct-acting oral anticoagulants

| | Re-Ly dabigatran N=18,113 | Rocket-AF rivaroxaban N=14,264 | Aristotle Apixaban N=18,201 | Engage AF Edoxaban n-=21,105 |
|---|---|---|---|---|
| Warf TTR | 64% | 55% | 62% | 65% |
| stroke | 0.66* | 0.88 | 0.79* | 0.88 |
| Hem-stroke | 0.26* | 0.59* | 0.51* | 0.54* |
| Major bleed | 0.93 | 1.04 | 0.69* | 0.80* |
| ICH | 0.40* | 0.67* | 0.42* | 0.47* |
| GI bleed | 1.50** | 1.39** | 0.89 | 1.23** |
| Mortality | 0.88 | 0.85 | 0.89* | 0.92 |

* $p < 0.05$

# Anticoagulation…Take home

- Anticoagulate
- Use NOACs when possible
- Consider Watchman

# Is Sinus Rhythm Important ?

- AFFIRM *(Wyse DG, et.al. NEJM 2002;347:1825-31)*
- RACE *(Hagens VE, et.al. JACC 2004;43:241-247.)*
- STAF *(Carlsson J, et.al. JACC 2003;41:1690-1696.)*

All concluded …..that there were no mortality differences between rate control and rhythm control strategies in the treatment of AF

# Sinus Rhythm

- AFFIRM type trials excluded symptomatic patients
- Trials designed to test strategy not therapy
- Therapy was very ineffective
- Sub-study “on treatment analysis”
- NSR= 47% lower risk of death
- AAD use = 49% increased risk of death

*AFFIRM investigators. Circ 2004;109:1509-1413*

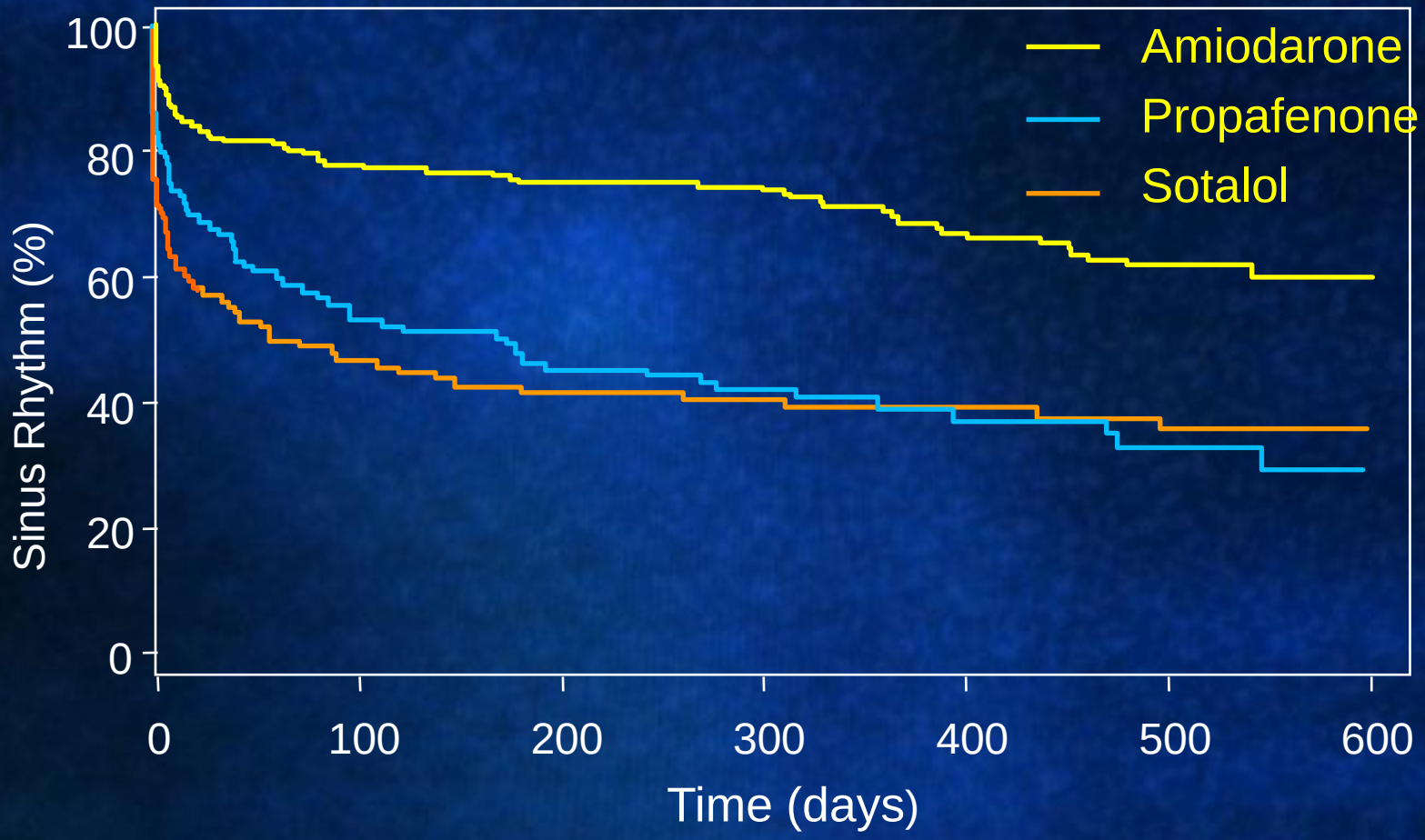
# Most patients are symptomatic

- Don’t overlook subtle symptoms
- NSR is good
- Consider a trial of NSR
- Don’t label “asymptomatic”

# You have AF (and NSR preferred)

- Take a drug life long to suppress it
- Have an ablation

# Antiarrhythmic Drugs



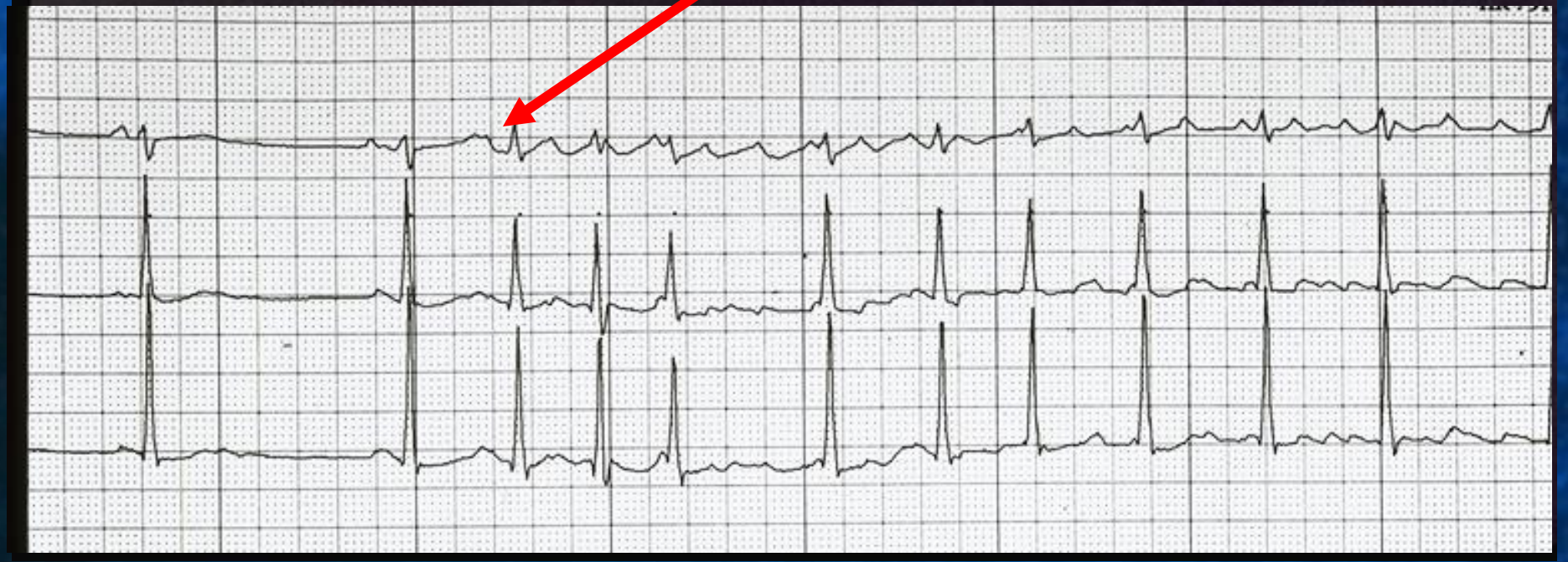

Roy et al. NEJM 2000;342:913-920.

# --why consider ablation ?

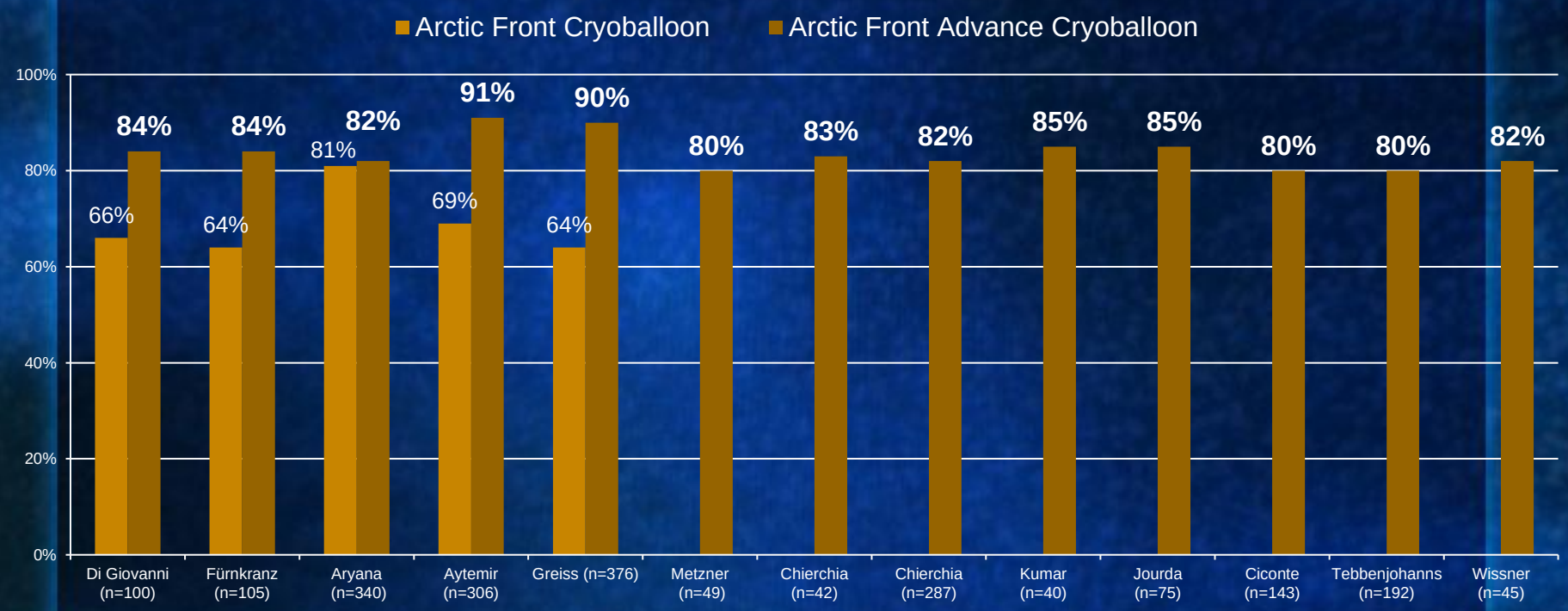
- 1-2 hour elective procedure
- 80-85% success (1 year)
- <5% risk (<1% serious risk)

# SPONTANEOUS INITIATION OF ATRIAL FIBRILLATION BY ECTOPIC BEATS ORIGINATING IN THE PULMONARY VEINS

MICHEL HAÏSSAGUERRE, M.D., PIERRE JAÏS, M.D., DIPEN C. SHAH, M.D., ATSUSHI TAKAHASHI, M.D., MÉLÈZE HOCINI, M.D., GILLES QUINIOU, M.D., STÉPHANE GARRIGUE, M.D., ALAIN LE MOUROUX, M.D., PHILIPPE LE MÉTAYER, M.D., AND JACQUES CLÉMENTY, M.D.



# 1 year Single Procedure Success Cryoballoon

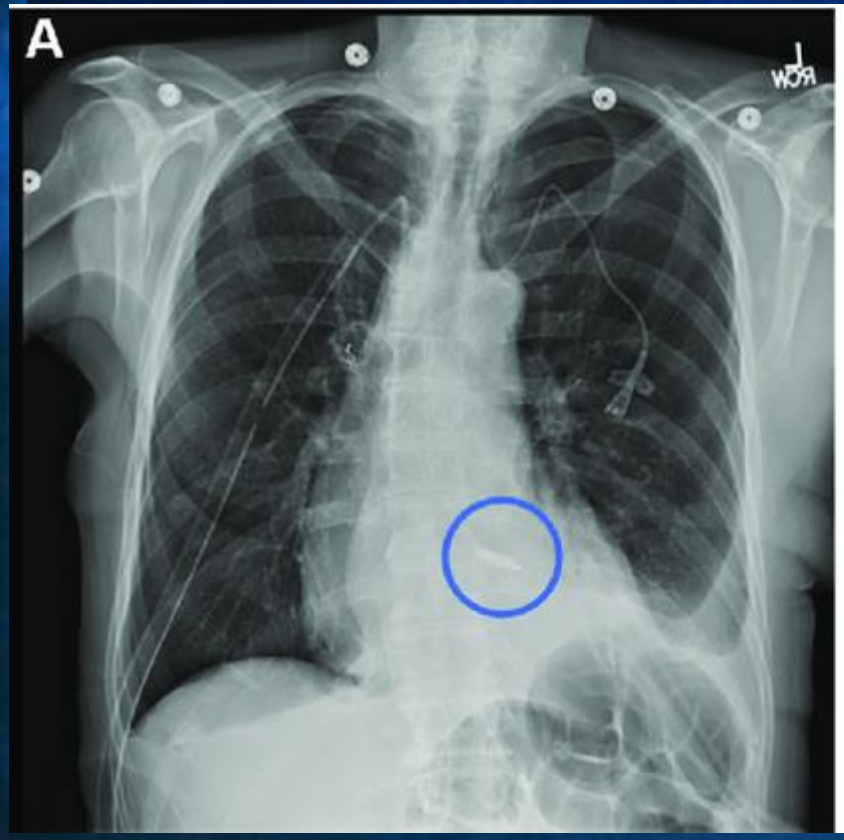


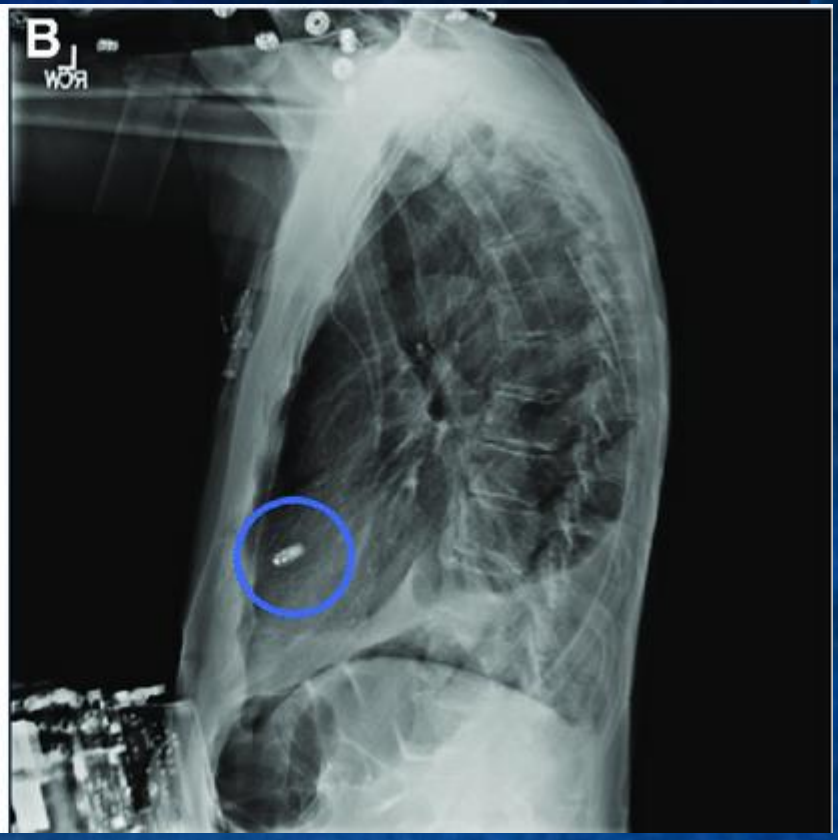
# Take home

- NSR is preferred
- Ablation is far superior to drugs
- Ablation can be performed with low risk
- Ablation is far more effective when performed early

# Rate Control Strategy:

- Perfectly acceptable in truly asymptomatic patients that can be rate controlled (document)
- When in doubt cardiovert
- Understand that you are limiting your downstream options


A
L
RCW


B
L
RCW

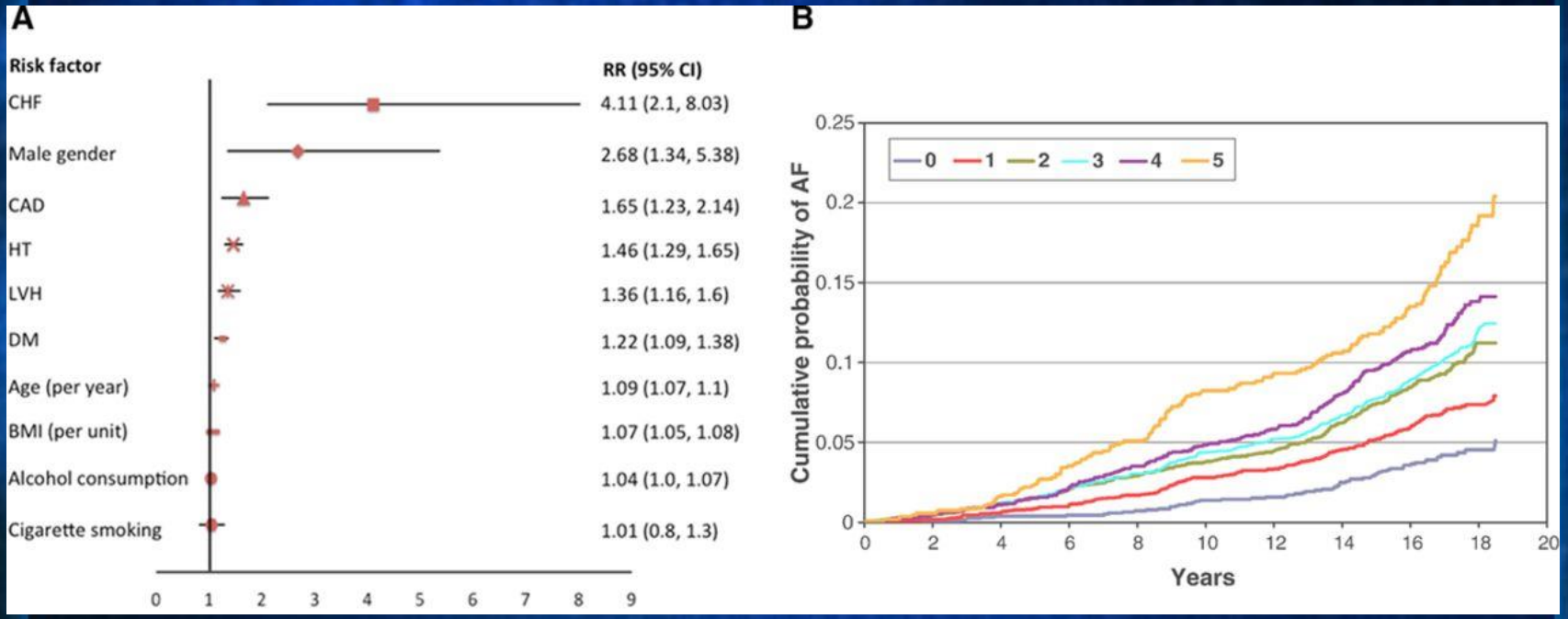
# Risk factors for AF

| Risk factor | Est. increased risk | |
|---|---|---|
| age | 2x | per decade |
| Male sex | 1.5x | |
| genetics | 2x | one parent |
| | | |
| | | |
| | | |
| | | |

# Modifiable Risk factors for AF

| Risk factor | Est. increased risk |
|---|---|
| Htn | 2x |
| CHF | 5x |
| obesity | 2x |
| DM | 1.5x |
| ETOH | 1.5x |
| OSA | 4x |
| CKD | 3x |
| Smoking | 2x |

Benjamin EJ, et,al. Independent risk factors for Atrial Fibrillation. The Framingham Heart Study. JAMA 1994;271:840-844.
Andrade J, et.al. The Clinical Profile and Pathophysiology of Atrial Fibrillation. Circ Res 2014;114:1453-1468.



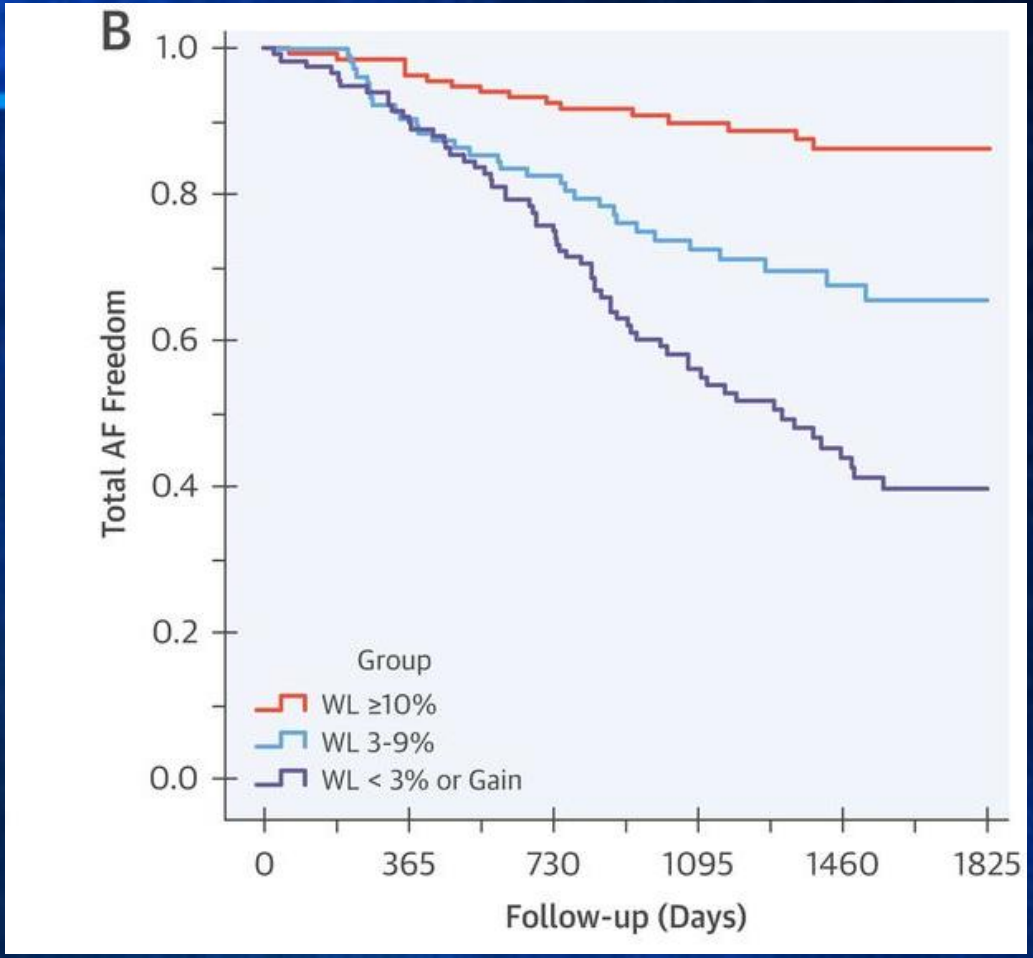

Lau, DH, et,al. Modifiable Risk Factors and Atrial Fibrillation, Circulation 2017; 136: 583-596

Can we improve AF control with risk factor modification ?

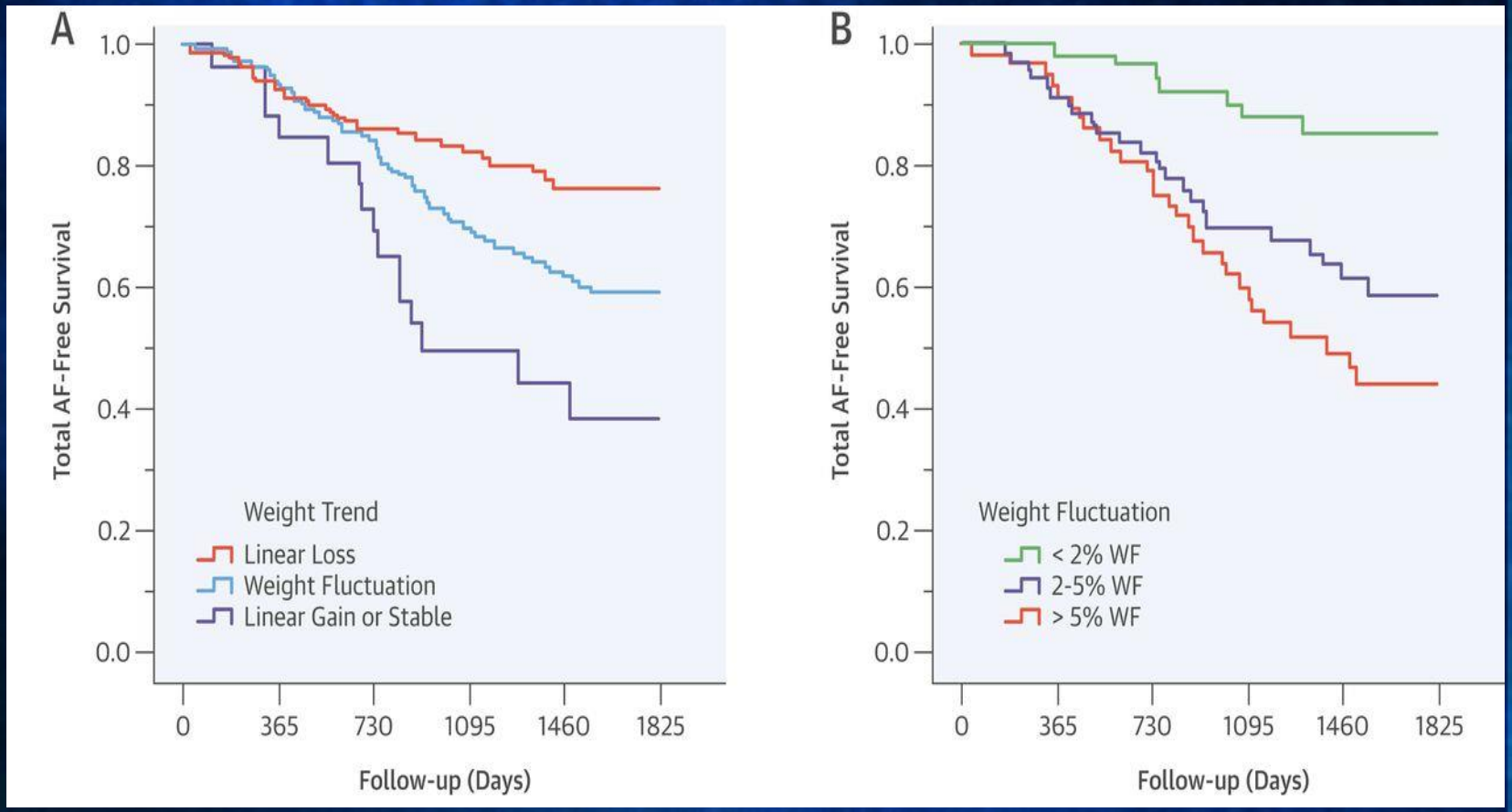
# Long-Term Effect of Goal-Directed Weight Management

- 1415 consecutive patients w/ AF
- 825 BMI>27
- 355 participated in a physician-led weight management clinic
- Group 1 (>10%), group 2 ( 3-9%), group 3 (<3%)
- Weight fluctuation vs sustained

Sanders,P, et,al. The Legacy Study. J AM Coll Card 2015;65:2159-69.




Sanders P et al. JACC 2015;65:2159-2169



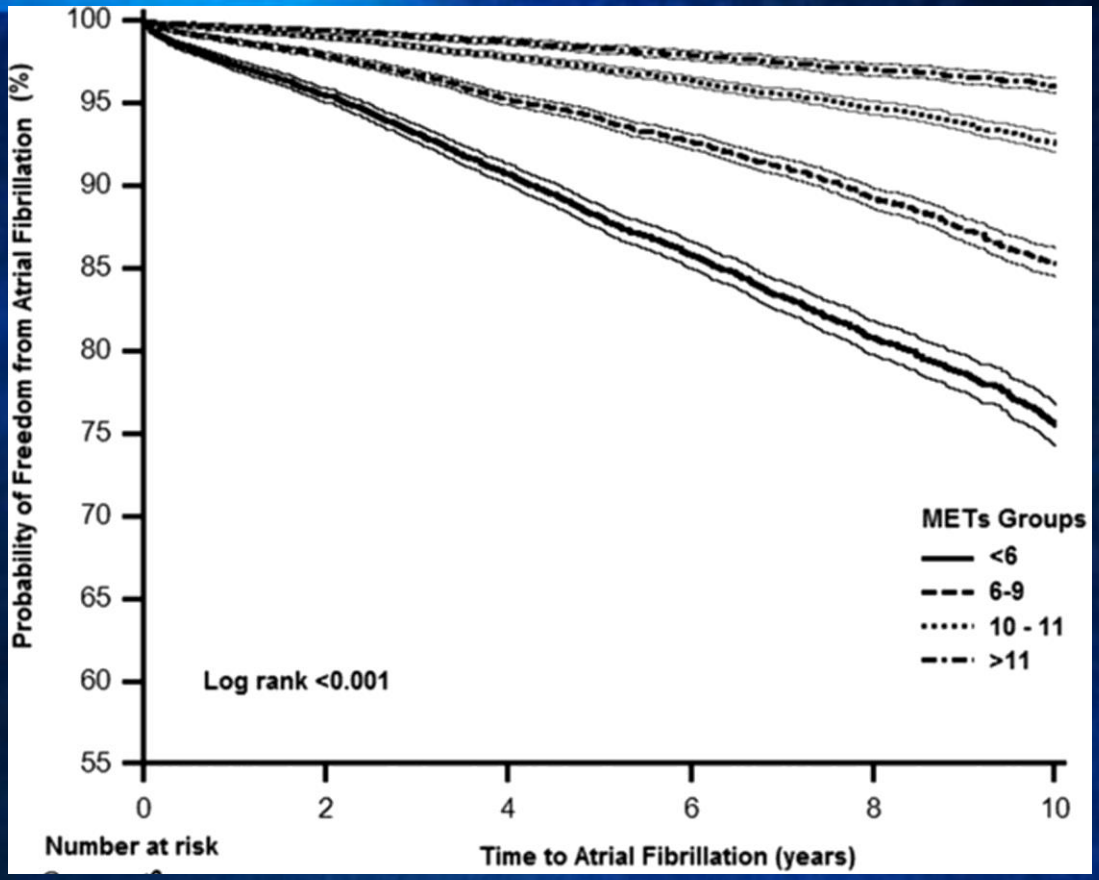

Sanders P et al. JACC 2015;65:2159-2169

# Cost effectiveness of a risk factor management (RFM) strategy ?

- 38 % reduction in initial ablation
- 20 % reduction in redo ablation
- 36% reduction in hospitalization
- 58% reduction in ER visits
- A significant improvement in QOL scores plus $53,452 savings

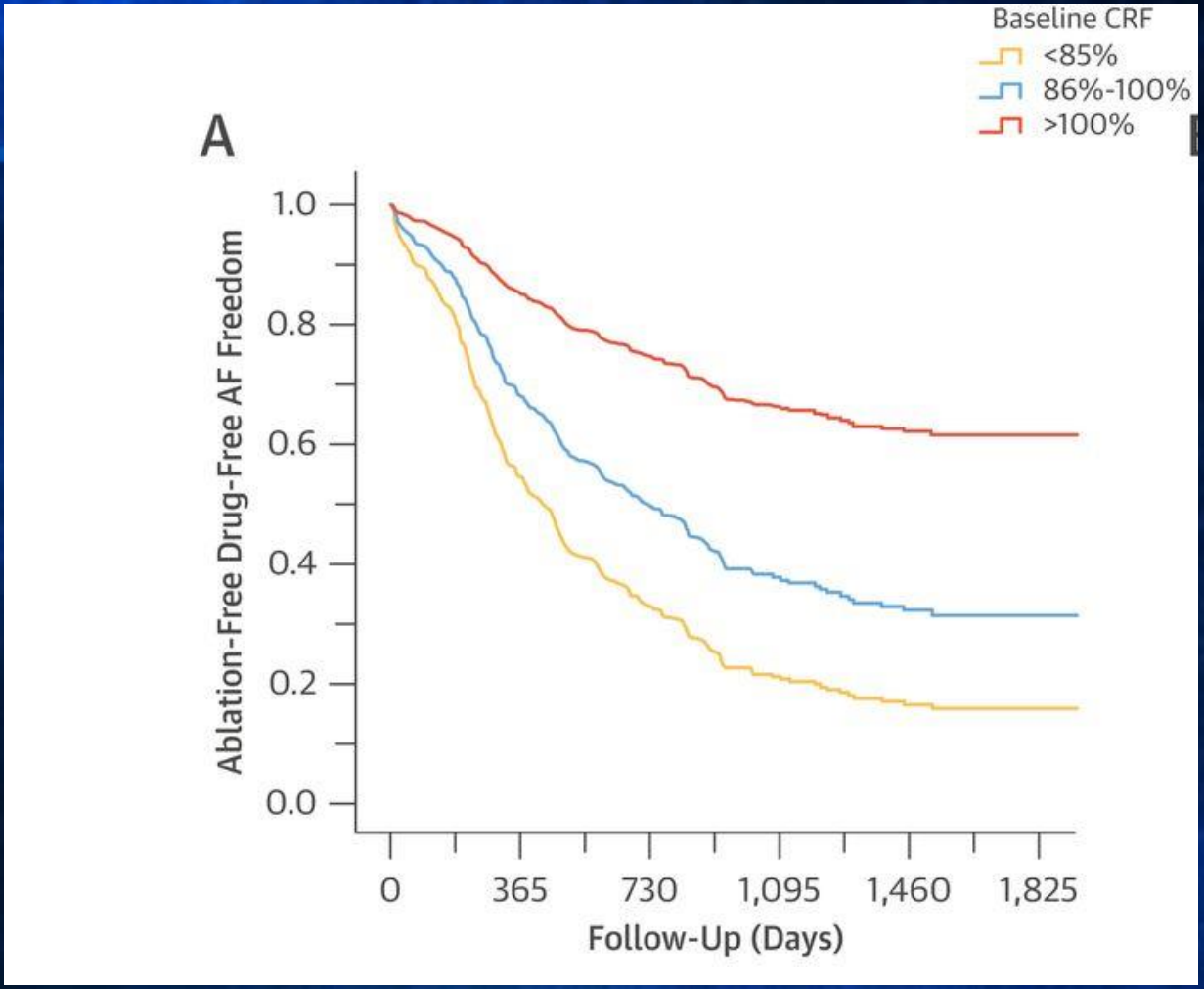
Pathak, RK, et,al. J Am Coll Cardiol EP 2017;3:436-47

# Cardiorespiratory Fitness and AF

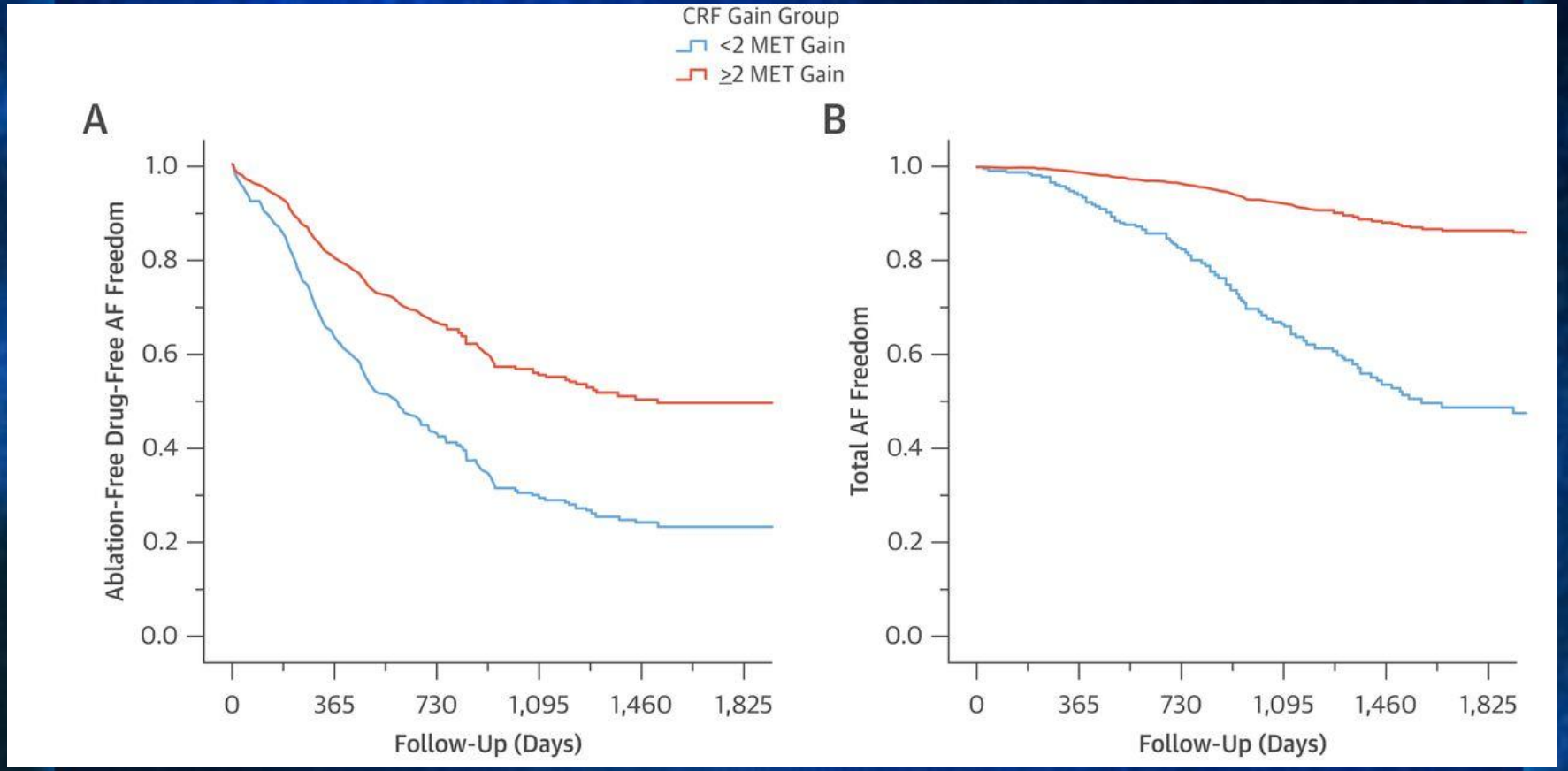



N=64,561

Qureshi WT, et,al. Cardiorespiratory Fitness and Risk of Incident Atrial Fibrillation, the Henry Ford Exercise Testing Project. Circulation 2015;131;1827-1834.




Rajeev K. Pathak et al. JACC 2015;66:985-996




Rajeev K. Pathak et al. JACC 2015;66:985-996

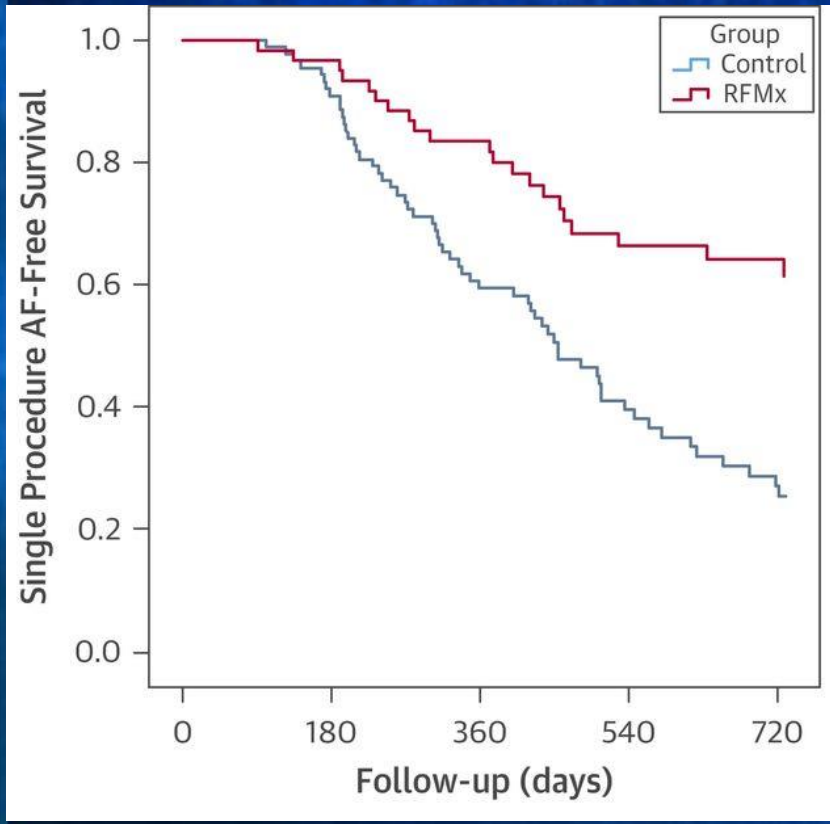
Can we improve our ablation results with risk factor modification ?

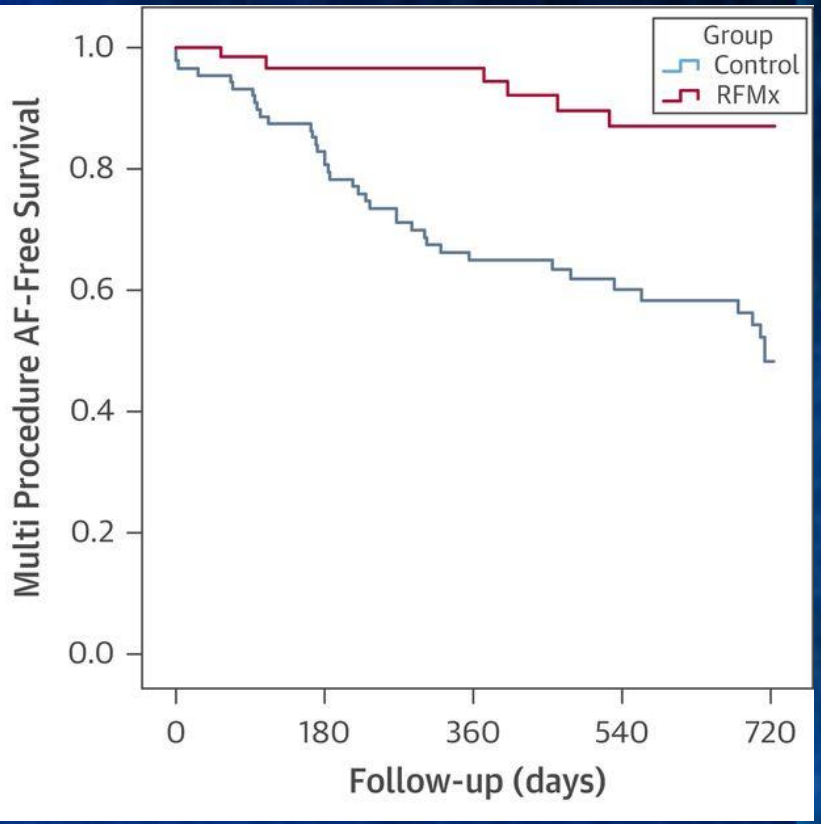
# Aggressive Risk Factor Reduction Study for Atrial Fibrillation:

## The ARREST-AF Cohort Study

- 281 consecutive AF ablation patients
- 149 BMI > 27
- All offered RFM (risk factor management)
- 61 RFM vs 88 control
- RFM resulted in significant reductions in weight, BP,lipids, and better glycemic control

# The ARREST-AF Cohort Study




Rajeev K. Pathak et al. JACC 2014;64:2222-2231

# Take home

- Aggressive risk factor modification is an essential part of an AF management strategy

# 2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

7.13. Weight Loss (New)

Class 1b. For overweight and obese patients with AF, weight loss, combined with risk factor modification, is recommended

# ETOH (excluding holiday heart)

- Meta-analysis of 7 prospective studies, 12 yr f/u 12,554 AF patients

  8% increase in AF for each drink per day

- Meta-analysis of 14 retrospective studies

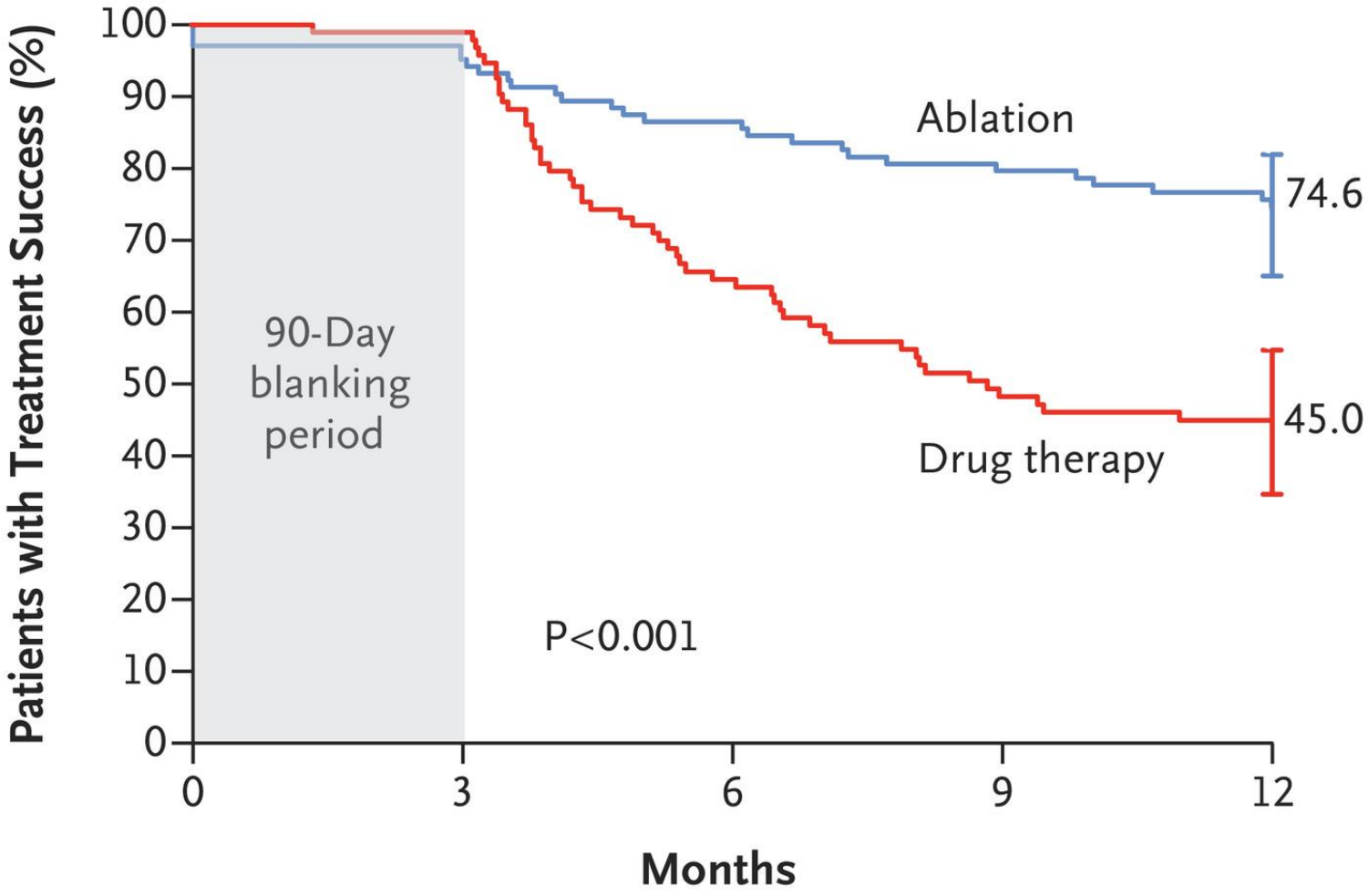
  7/week = 8% increase in AF
  14/week =17% increase in AF
  21/week – 25% increase in AF


1) Larsson AC J Alcohol consumption and the risk of AF, a prospective study. Am Coll Card 2014;64:281-9
2) Kodma S Alcohol consumption and the risk of AF, a meta-analysis. J Am Coll Card 2011;57:427-36

# Trial data on ablation as first line therapy

- multiple published randomized trials
- Meta-analysis N=491
- Freedom from AF better w/ ablation RR 0.63 ( $p<0.02$)

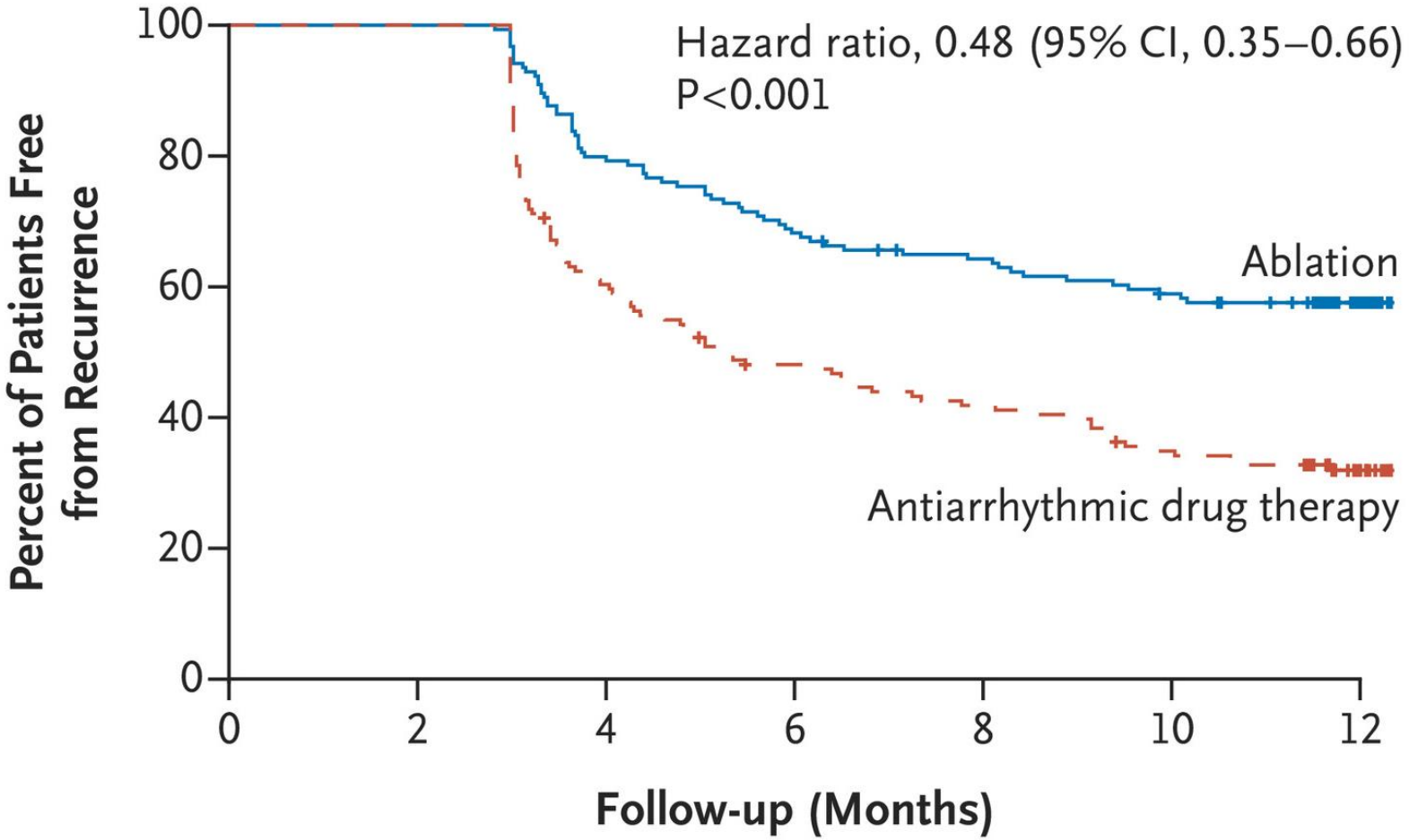
*Hakalahti,A Europace (2015) 17;370-378.*




**No. at Risk**

| | | | | | |
|---|---|---|---|---|---|
| Ablation | 104 | 99 | 88 | 81 | 70 |
| Drug therapy | 99 | 93 | 60 | 44 | 39 |

Wazni OM, Dandamudi G, Sood N et al. Cryoballoon ablation as initial therapy for atrial fibrillation. *N Engl J Med* 2021;384:316-324.




**No. at Risk**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ablation | 154 | 154 | 123 | 105 | 96 | 86 | 55 |
| Antiarrhythmic drug therapy | 149 | 149 | 89 | 69 | 60 | 49 | 27 |

Andrade JG, Wells GA, Deyell MW et al. Cryoablation or drug therapy for initial treatment of atrial fibrillation. *N Engl J Med* 2021;384:305-315.

# Situations where ablation as first line therapy is preferred

- AF patient with bradycardia
- Competitive athlete
- CHF ( improved EF, QOL, functional capacity, mortality)
- Patient preference

# Summary:

- AF is a chronic condition
- Aggressive risk factor modification is an essential part of an AF management strategy
- AF ablation is a very effective procedure that can be performed at low risk and result in substantial patient benefit
- For best results it should be considered early in the course of therapy