Good Arrhythmia Control after Catheter Ablation for Atrial Fibrillation Is Associated with Lower All-cause Mortality

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KLINIKA KARDIOLOGIE

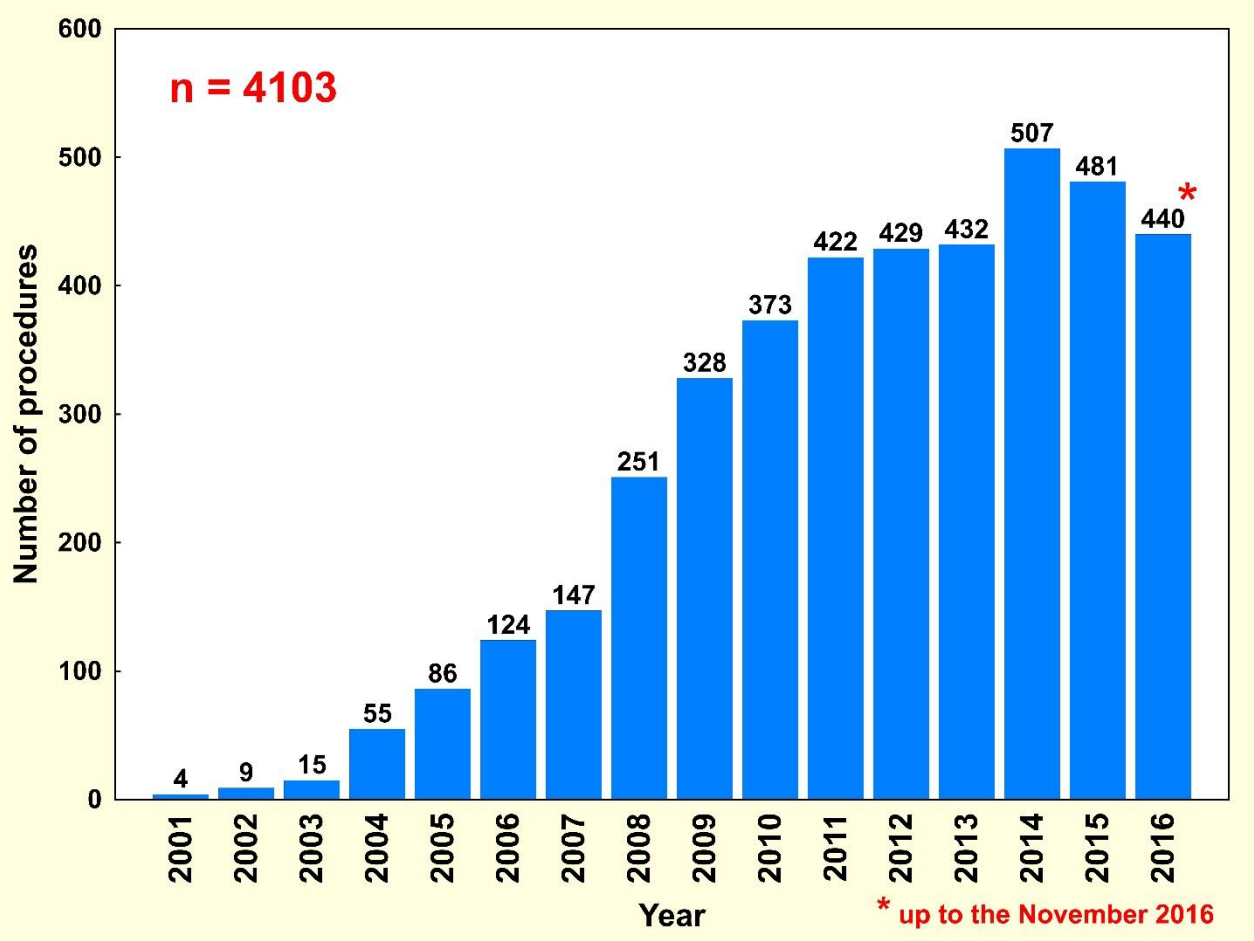
IK+E M

Agenda

- **Analysis of all-cause mortality after ablation for atrial fibrillation**
  - Retrospective study, single-centre (IKEM)
  - Association of mortality with arrhythmia control

- **Brief review of studies that investigated the survival impact of AF ablation**

AF ablation volume



 # procedures per patient:

1.36 ± 0.65

Total 4103 procedures in 3014 patients between January 2001 and November 2016

Baseline characteristics

N = 3014

Paroxysmal AF (%)	67.5
Males (%)	68.1
Age (yrs)	59 ± 10
BMI (kg/m^2)	29 ± 5
Heart failure (%)	15.8
Hypertension (%)	60.0
Diabetes (%)	12.0
Stroke / TIA (%)	5.9
CAD / PAD (%)	8.3
CHA_2DS_2-VASc	1.7 ± 1.3
LVEF (%)	56 ± 8
LAd (mm)	42 ± 6

Procedure time (min)	228 ± 69
RF time (min)	50 ± 20
PV isolation only (%)	68.7
CTI ablation (%)	20.0
Major complications (%)	3.5

Follow-up

Duration of follow up since the index ablation

… in terms of arrhythmia control:

32 ± 31 months

median: **21** (IQR: 10 - 42) months

… in terms of mortality:

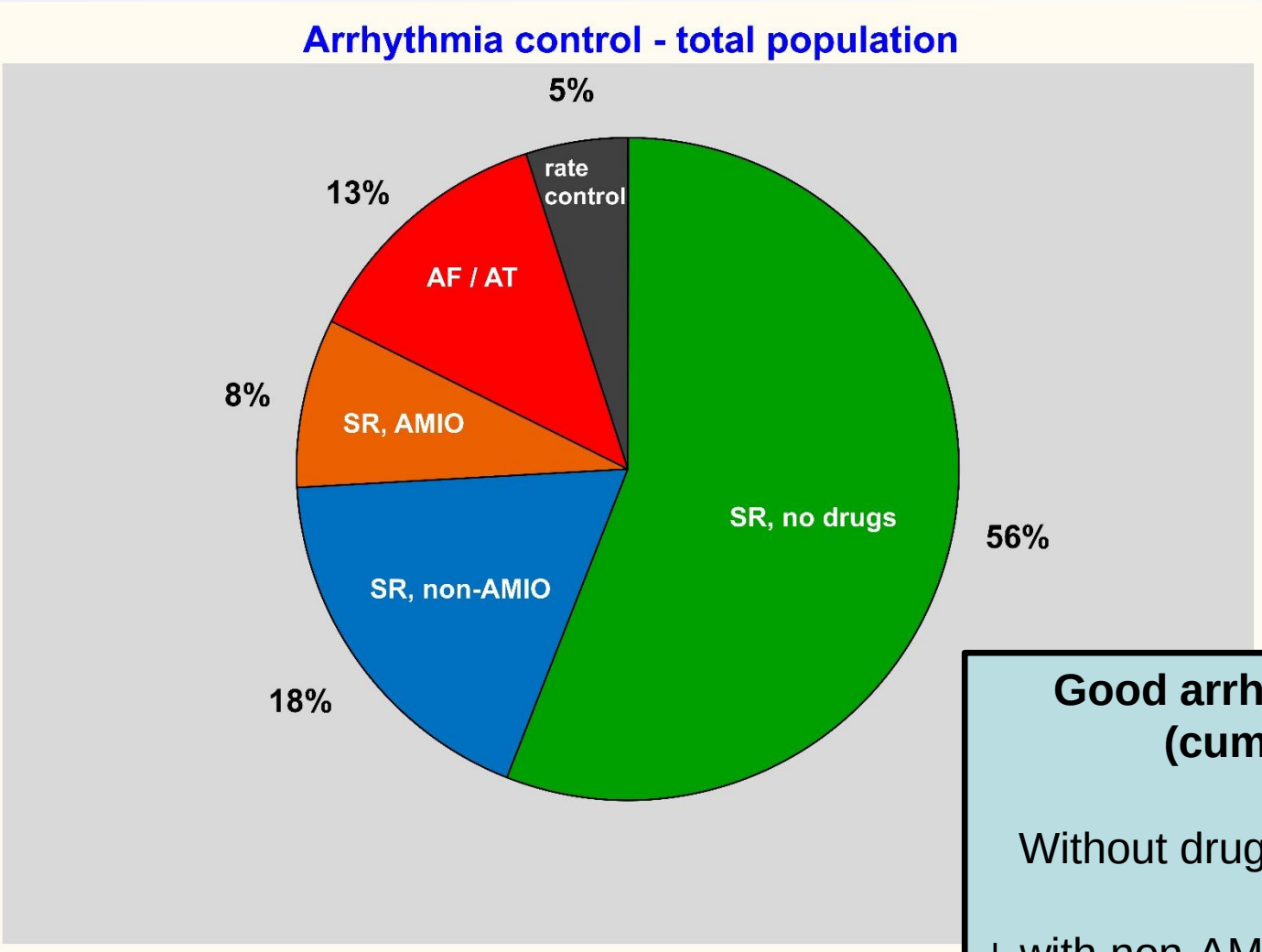
57 ± 39 months

median: **52** (IQR: 25 - 84) months

Arrhythmia status was censored at the last visit in IKEM

Mortality validated up to the December 2016

Rhythm outcome



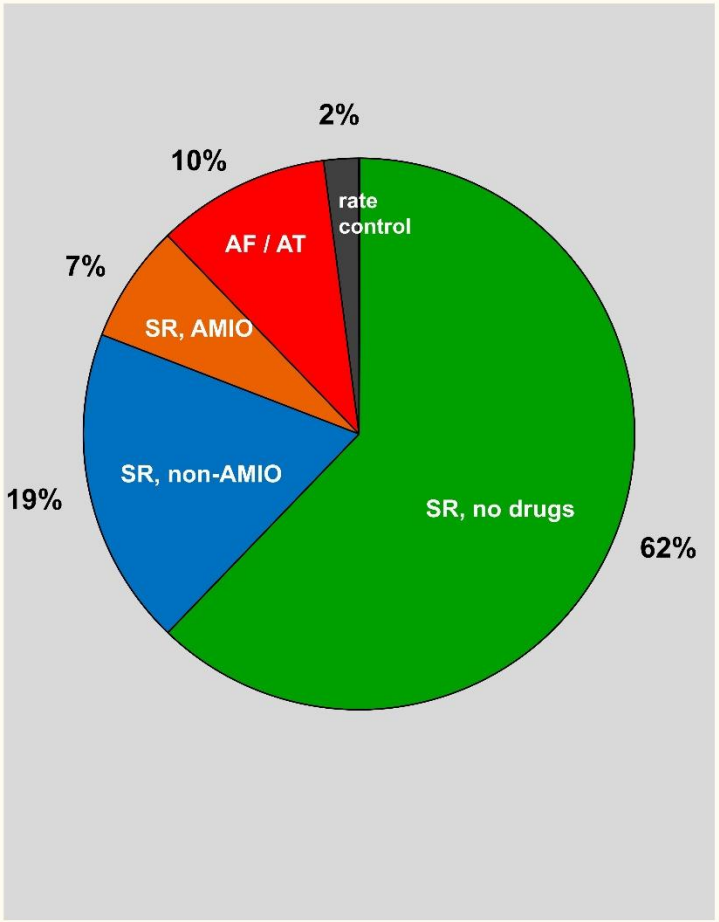
Good arrhythmia control (cumulatively)

Without drugs:	**55.9%**
+ with non-AMIO drugs:	**74.1%**
+ with amiodarone:	**82.3%**

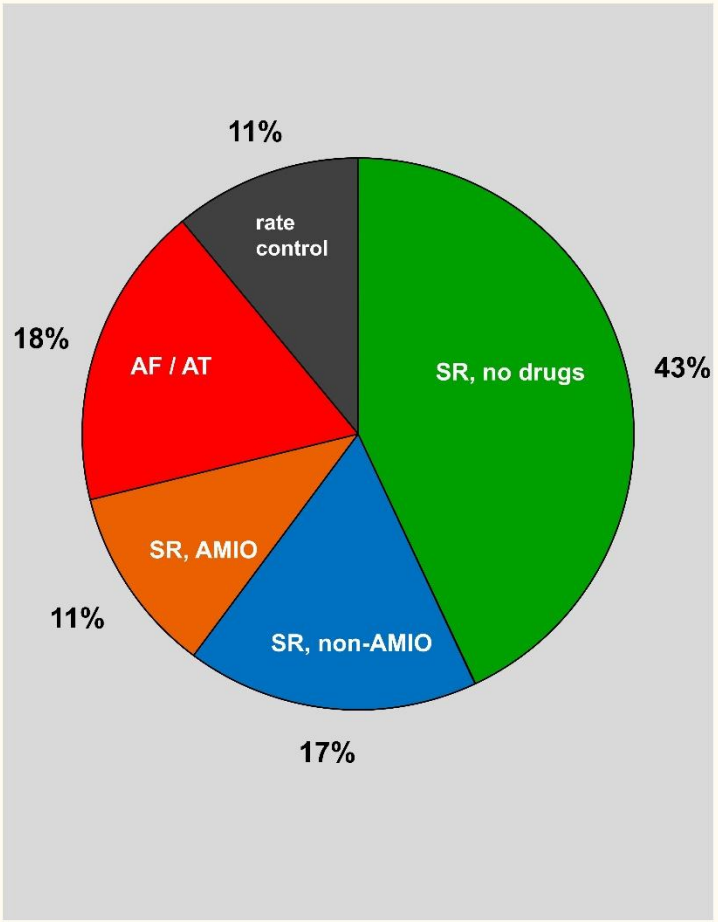
Rhythm outcome

Arrhythmia control

Paroxysmal AF

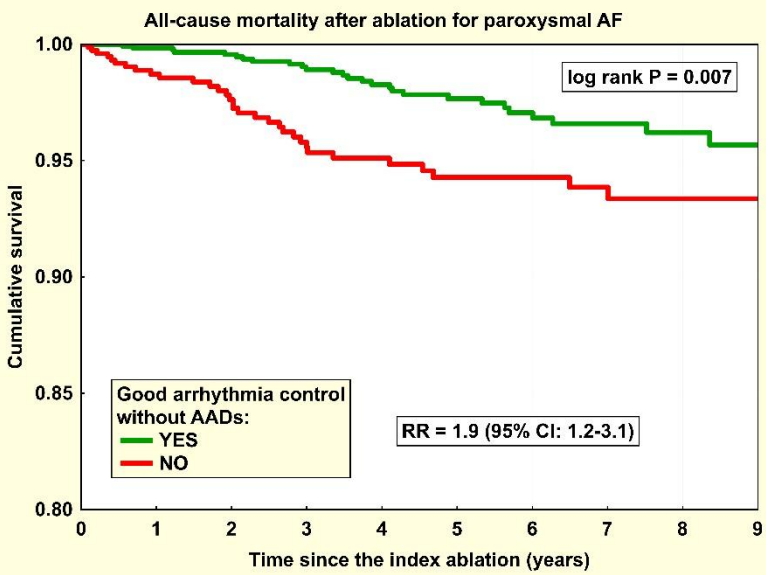


Persistent AF

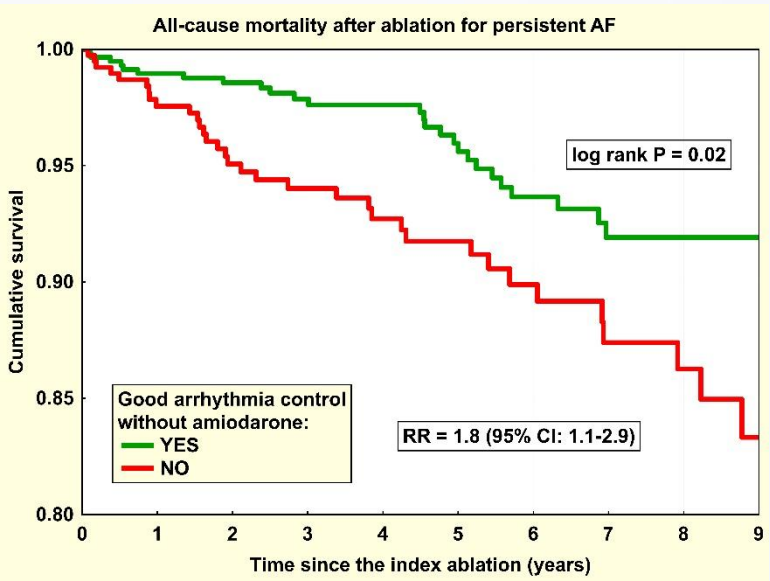


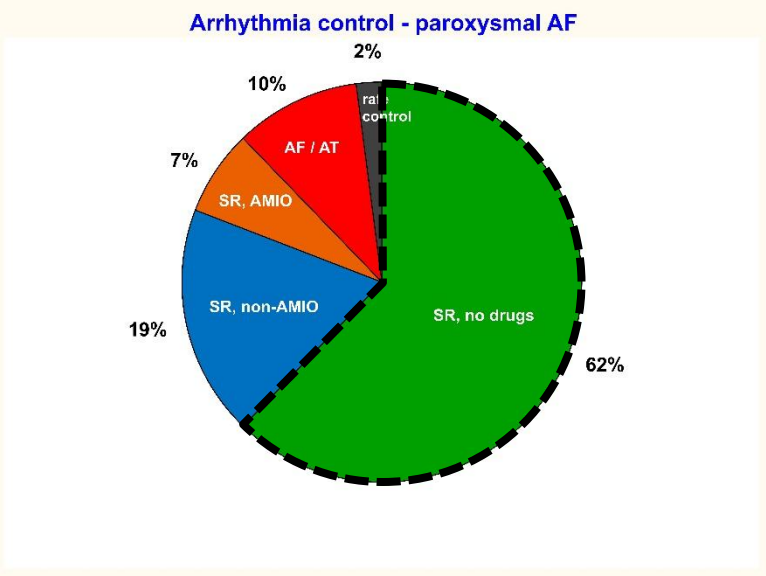
Arrhythmia control x mortality

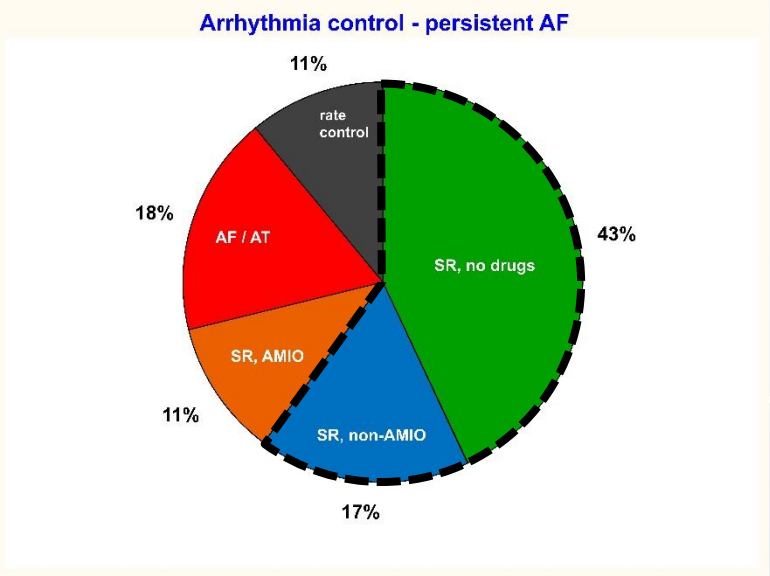
Paroxysmal AF



Persistent AF

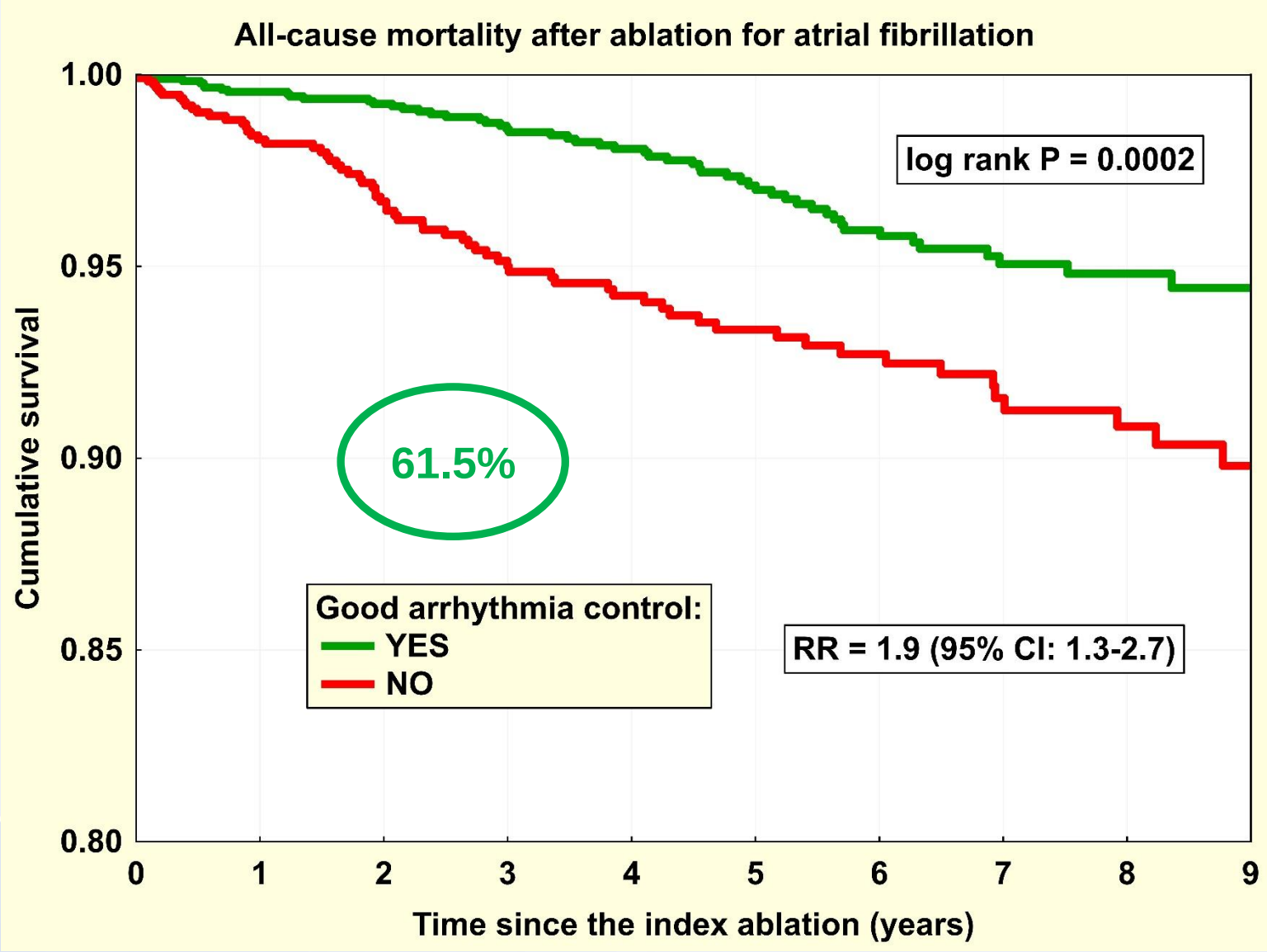






Arrhythmia control x mortality

Paroxysmal and persistent AF pooled



Prediction of all-cause mortality

Factor	Hazard ratio	95% CI	P
Poor arrhythmia control	1.7	1.2 – 2.4	0.002
Age > 60 let	1.8	1.2 – 2.6	0.002
LVEF ≤ 55%	1.5	1.1 – 2.2	0.02
CAD / PAD	2.7	1.8 – 4.1	<0.0001
Persistent AF	1.7	1.2 – 2.4	0.002

Other non-significant factors:

- *hypertension*
- *diabetes*
- *body-mass index*
- *LA size*

Conclusion

- **Good arrhythmia control after catheter ablation for atrial fibrillation was significantly associated with all-cause mortality.**

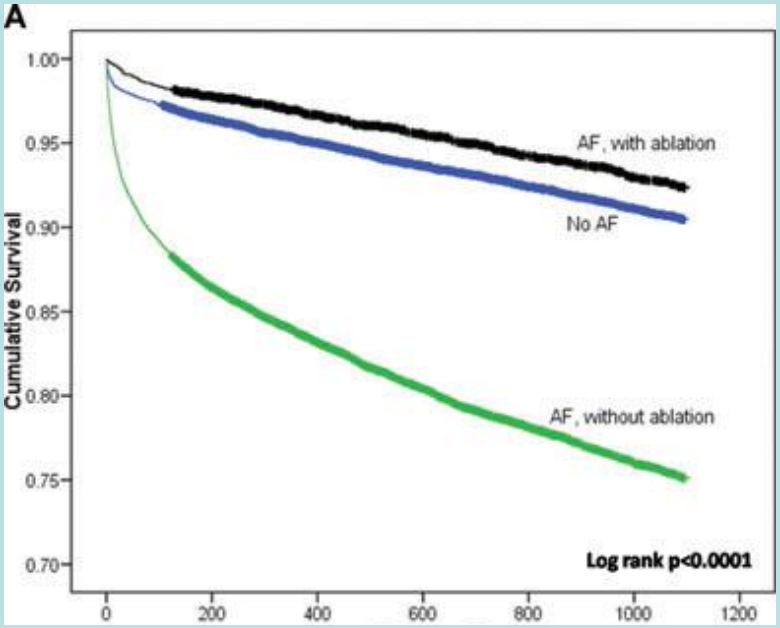
- **Reduction in total mortality was observed when post-ablation good arrhythmia control was achieved with minimum use of AA drugs:**
  - *without amiodarone*
  - *with other AADs allowed only in patient with originally persistent AF*

- **The association was independent of all available clinical factors:**
  - *age, gender, body-mass index*
  - *presence of hypertension / diabetes / coronary artery disease*
  - *LA size, LV ejection fraction*
  - *type of atrial fibrillation*

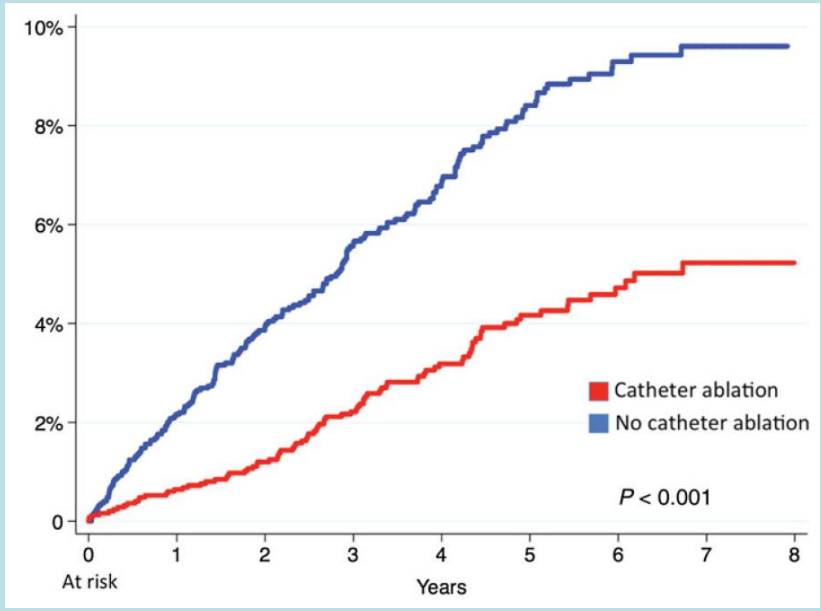
Limitations

- Retrospective observational study
- Absence of adjustment for unknown or unmeasured variables
- Post-hoc definition of subgroups at risk
- Relatively long period between the last assessment of rhythm status and death/censoring
- Missing data on cause of death

AF ablation - mortality studies



Bunch T et al.
J Cardiovasc Electrophysiol 2011; 22: 839–845



Friberg L et al.
European Heart Journal 2016; 37: 2478–87

AF ablation - mortality studies

Author	Ref	Active treatment	Comparator	Source data (*)	Sample size	Endpoint	Hazard ratio
Pappone et al.	JACC 2003	Ablation	No ablation	n/a	589 582	Total mortality	0.46
Bunch et al.	JCE 2011	Ablation	No ablation	n/a	4,212 16,848	Total mortality	0.36
Ganbari et al.	**HR 2014**	**Ablation SR**	**Ablation AF/AT**	**n/a**	**2,180 878**	**CV mortality**	**0.41**
Chang et al.	Circ AE 2014	Ablation	No ablation	884 89,258	846 11,324	Total mortality	0.88
Friberg et al.	EHJ 2016	Ablation	No ablation	5,176 361,913	2,836 2,836	Total mortality	0.50
Saliba et al.	HR 2017	Ablation	No ablation	1015 42,026	969 3,772	Total mortality	0.57
IKEM	**?? ??**	**Ablation SR**	**Ablation AF/AT**	**n/a**	**1853 1161**	**Total mortality**	**0.53**

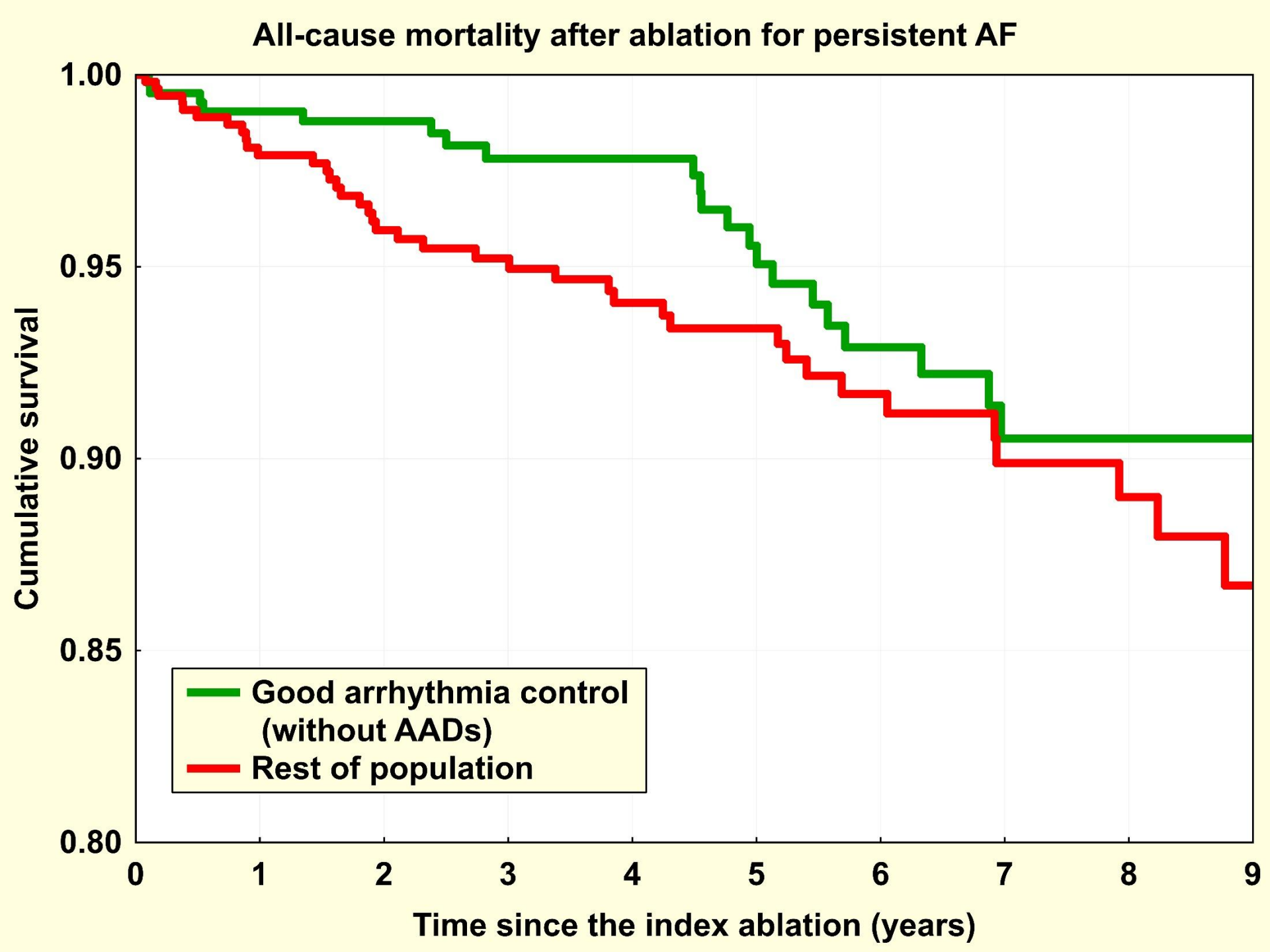
(*) source data used for propensity score matching

Summary

What is associated with mortality after AF ablation:

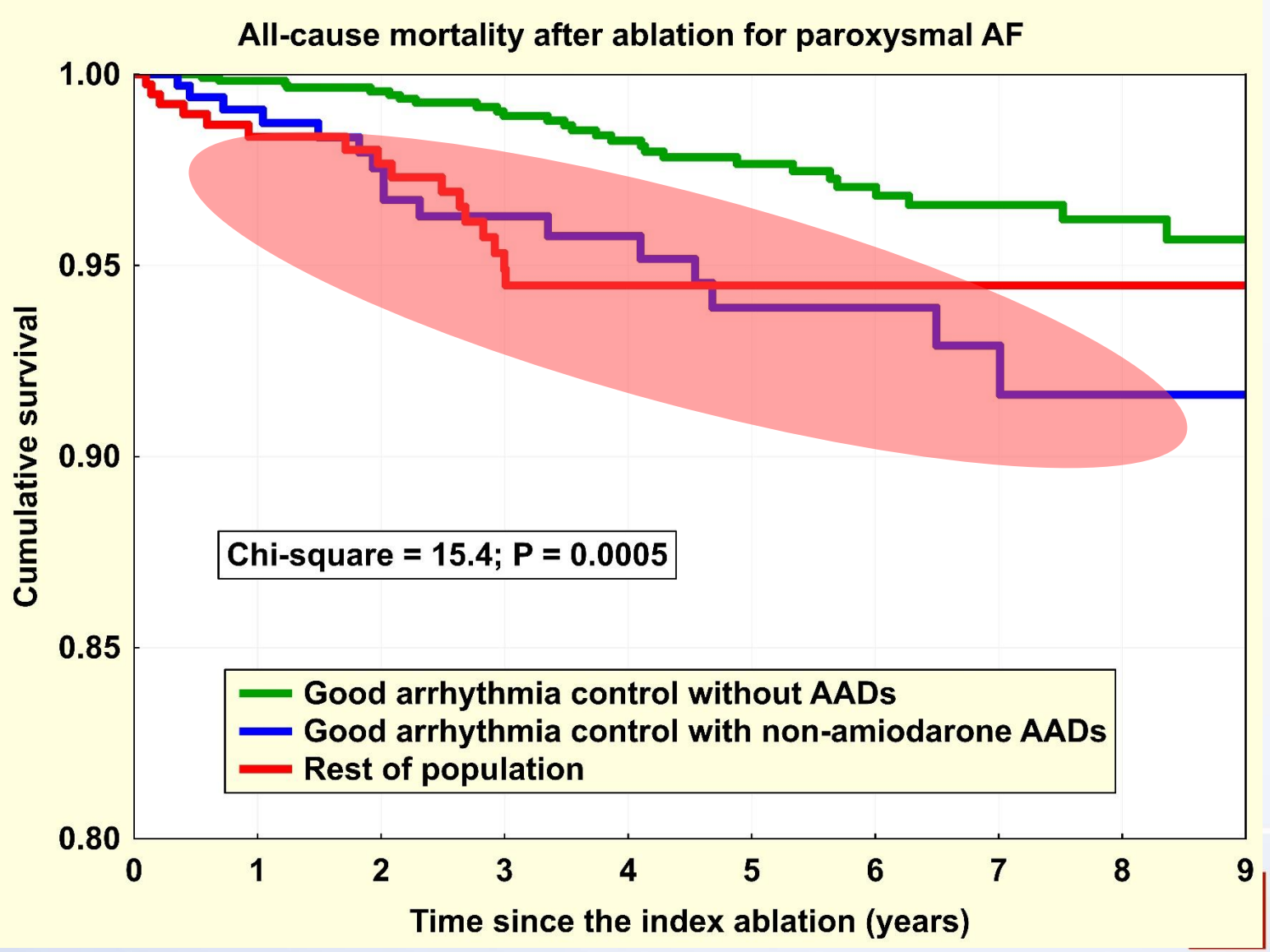
- **Rate control**
- **Poor rhythm control in general**
- **Good rhythm control with the use of amiodarone**
- **Any antiarrhythmic drugs in patients with paroxysmal AF**

Thank you !!


All-cause mortality after ablation for persistent AF
1.00
0.95
0.90
0.85
0.80
Cumulative survival
Good arrhythmia control
(without AADs)
Rest of population
0
1
2
3
4
5
6
7
8
9
Time since the index ablation (years)

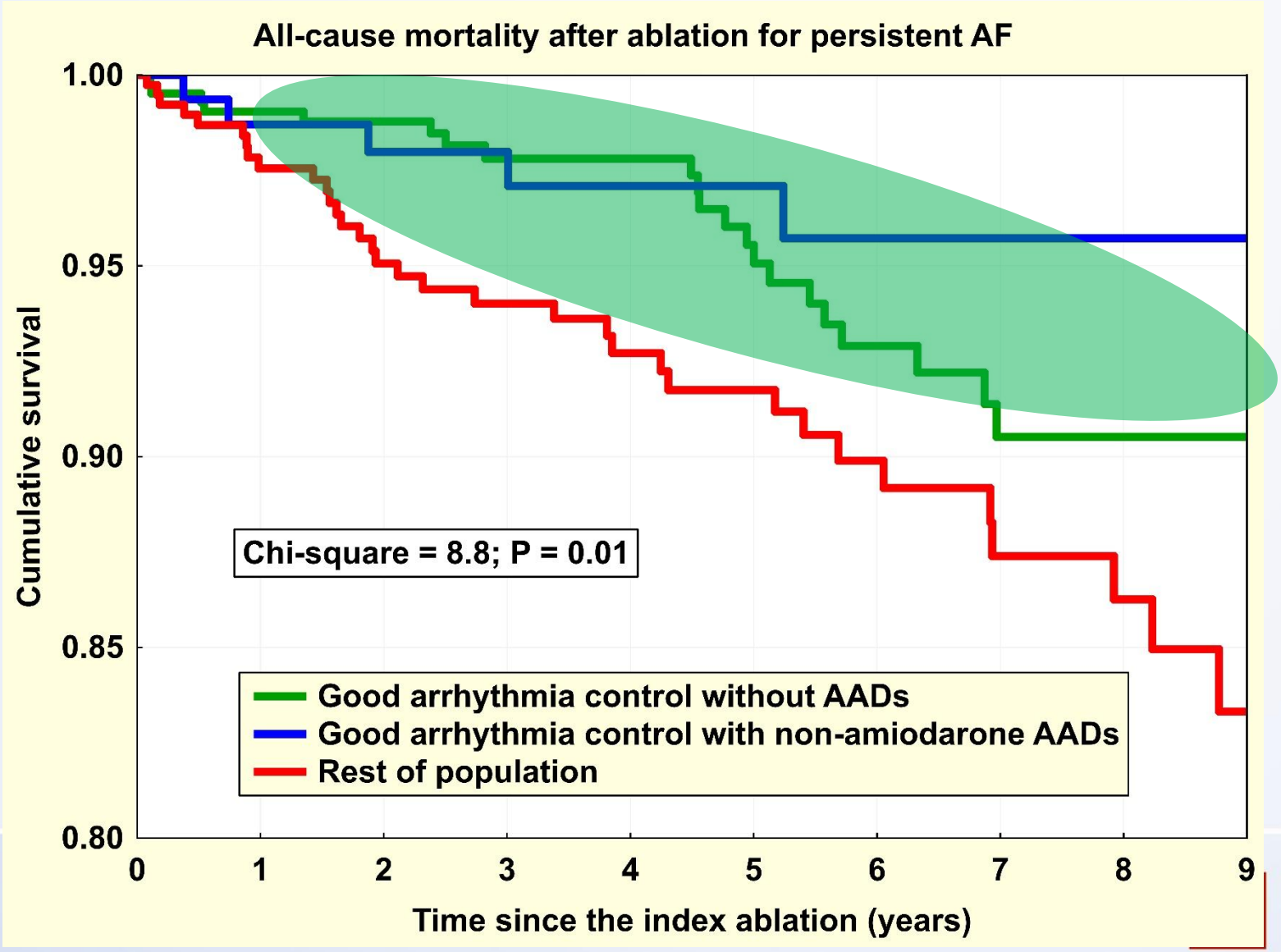
Arrhythmia control x mortality

Paroxysmal AF

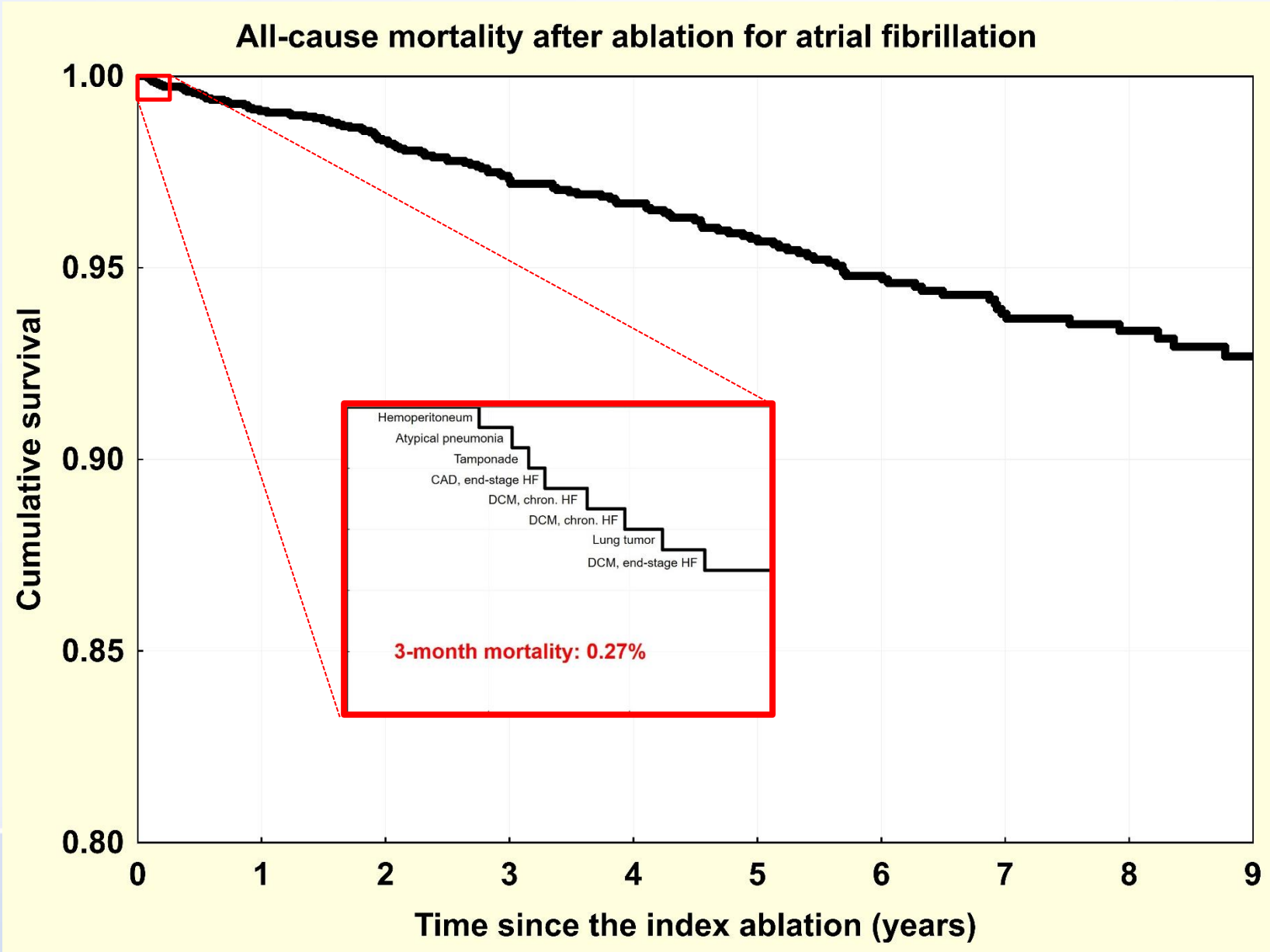


Arrhythmia control x mortality

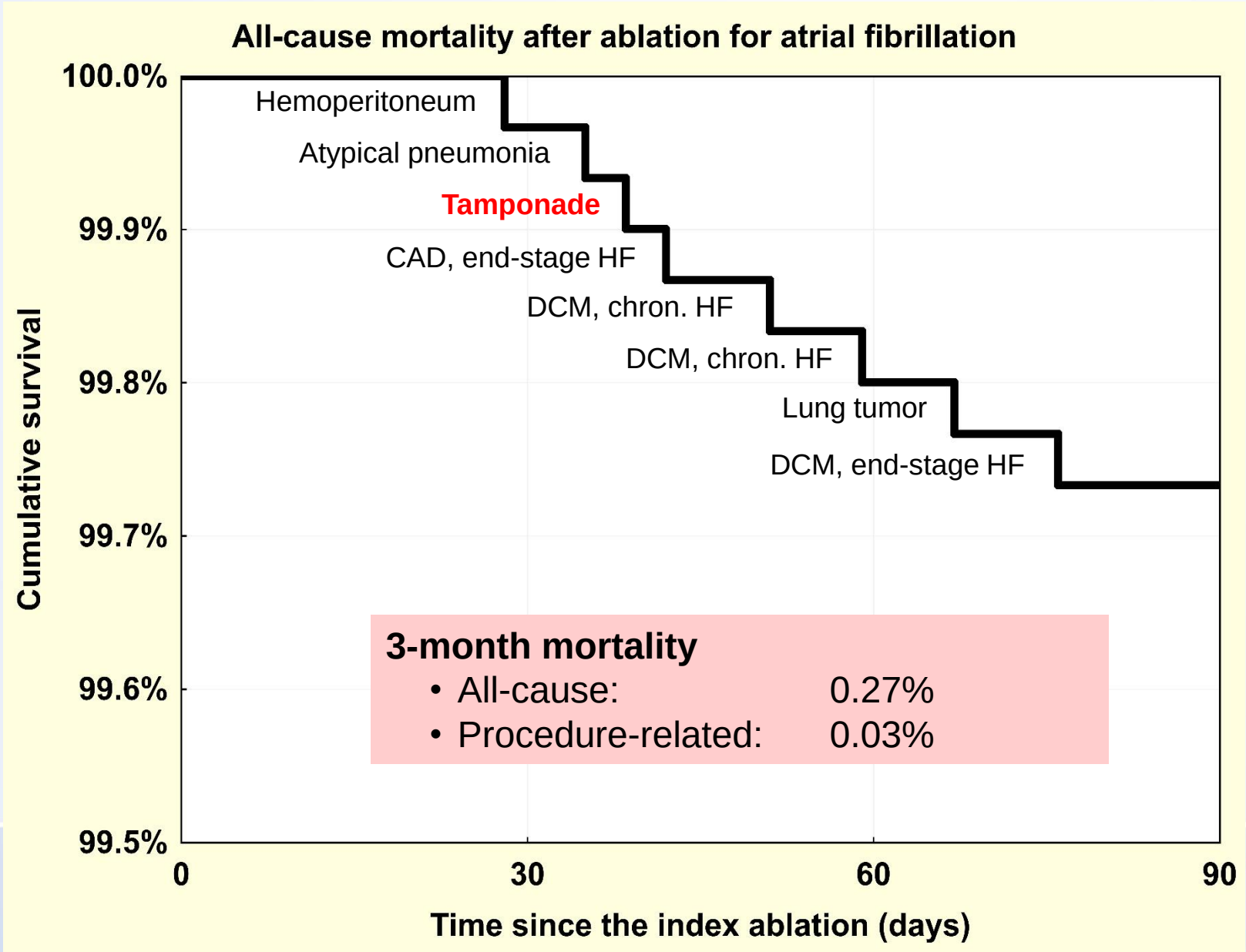
Persistent AF



All-cause mortality



Early mortality



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CABANA

December 2013

Primary endpoint

- **Total mortality**

Secondary endpoint

- **Composite:**
  - **total mortality**
  - **disabling stroke**
  - **serious bleeding**
  - **cardiac arrest**

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