



Long-term results of epicardial pacing in the young

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Introduction:

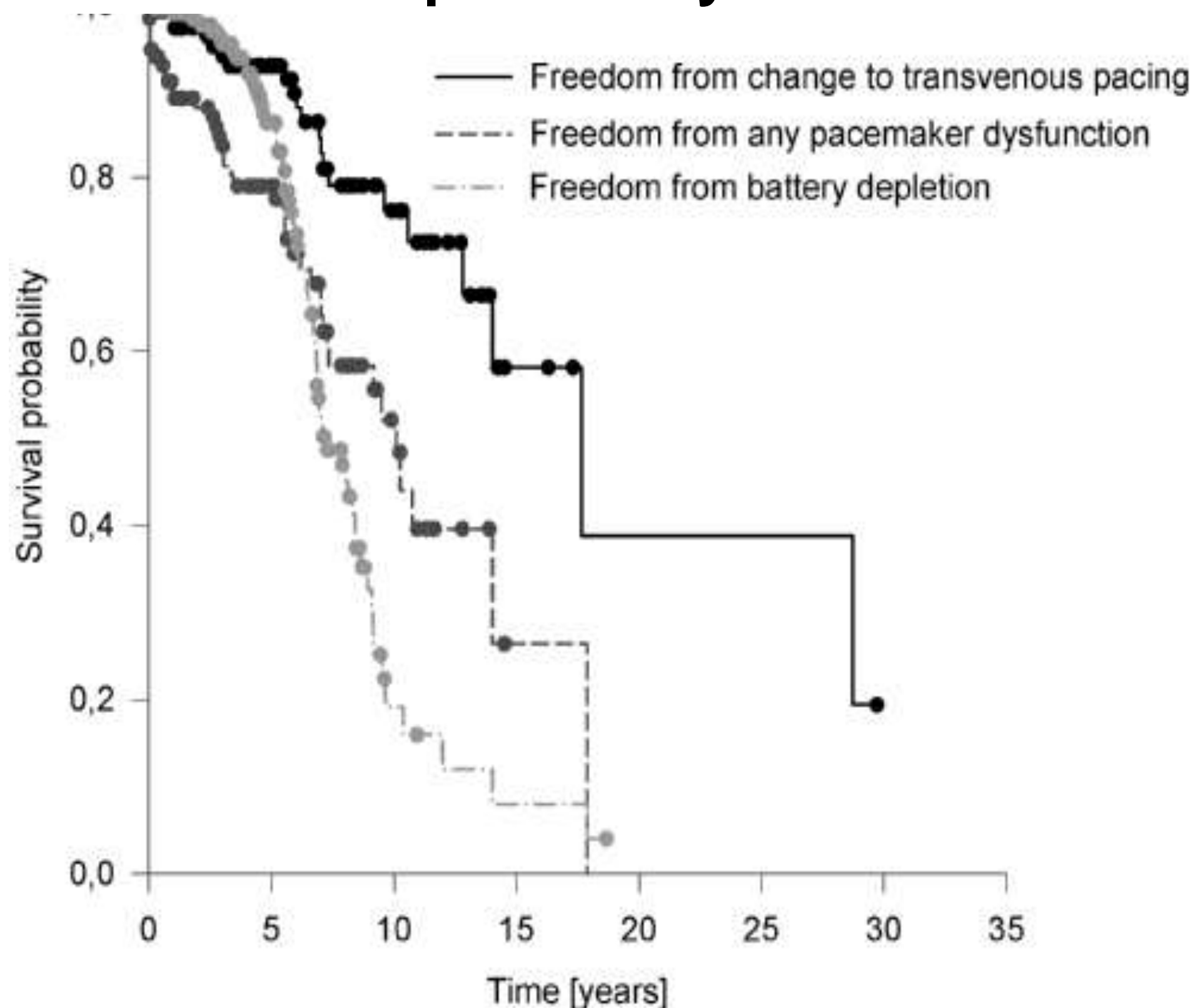
The aim of the study was to evaluate long-term results of permanent epicardial pacing in childhood

Methods:

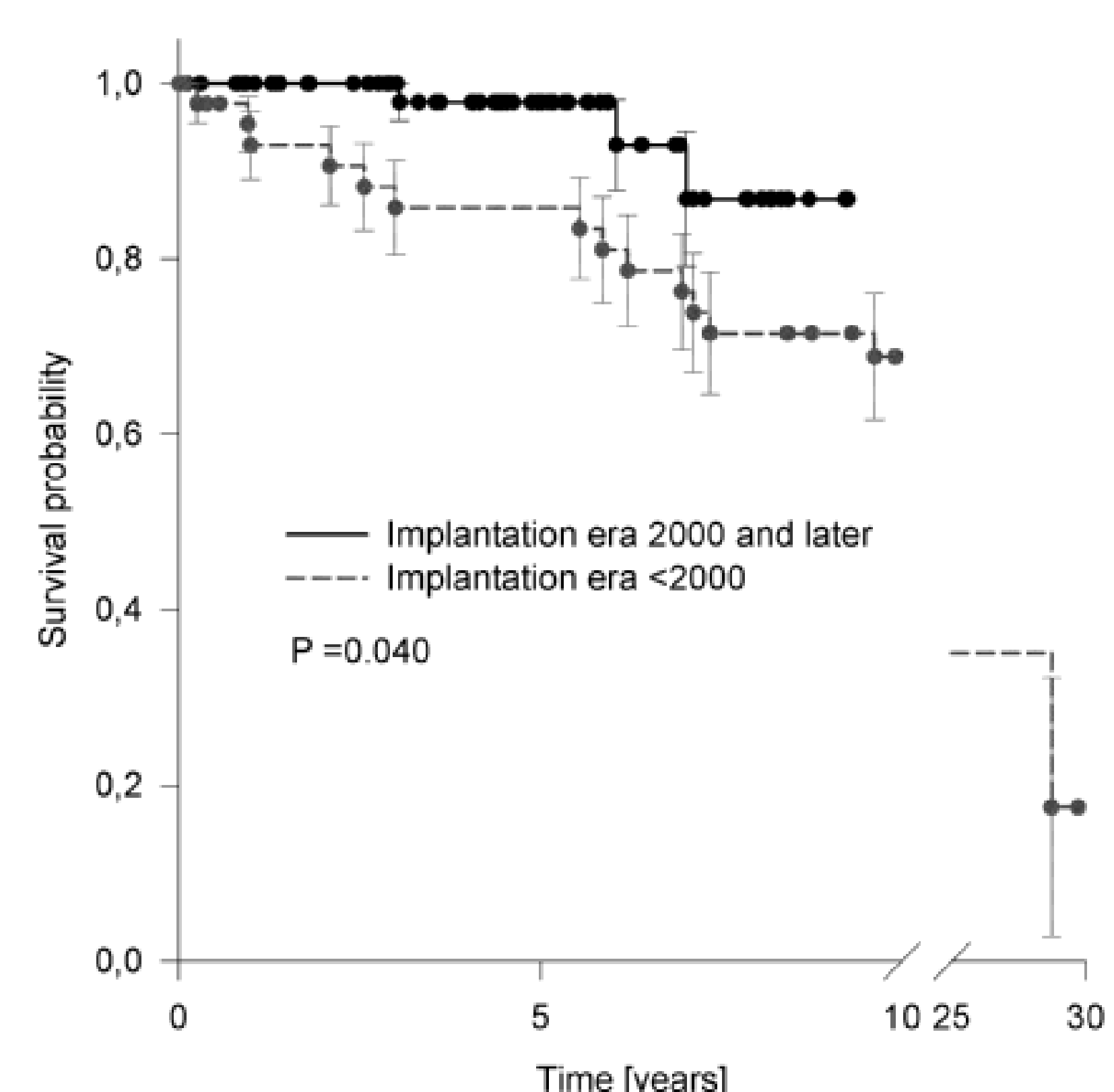
- Patients N=119
 - » Czech Rep., period: 1977-2009, all consecutive pts from one country
 - » Permanent epicardial pacemaker implantation at <18 yrs
 - » Age: median 1.8 (IQR 0.25 – 6.36) yrs
 - » Cong. heart disease (CHD): 91/119 pts (76.5 %)
- Indication for pacing
 - » 2nd/3rd° AV block: 103 pts (86.6 %), surgical in 60/103
 - » Sinus node dysfunction: 12 pts (10.1 %)
 - » Brady-tachy syndrome: 2 pts, affective syncope with asystole: 1 pat., 1st° AV block + RBBB: 1 pat.
- Pacing system
 - » 207 generators, 89 atrial, 153 ventricular leads
 - » subpulmonary ventricle = 92, systemic ventricle = 61
 - » Initial pacing mode: AAI = 5 (4.2 %), VVI/R = 39 (32.8 %), DDD/R = 63 (52.9 %), DDD/R biv. = 12 (10.1 %)
 - » Surgical access
 - » subxiphoid, sternotomy, thoracotomy
- Follow-up
 - » Median 6.4 (IQR 2.9/11.1) yrs
- Functional pacing system definition
 - » Absence of replacement/revision/abandonment of a pacing lead and/or generator due to:
 - » exit block
 - » increase in pacing threshold
 - » lead fracture/insulation break
 - » patient outgrowth
 - » premature (< 3 yrs) battery depletion
 - » infection
 - » generator failure

Results:

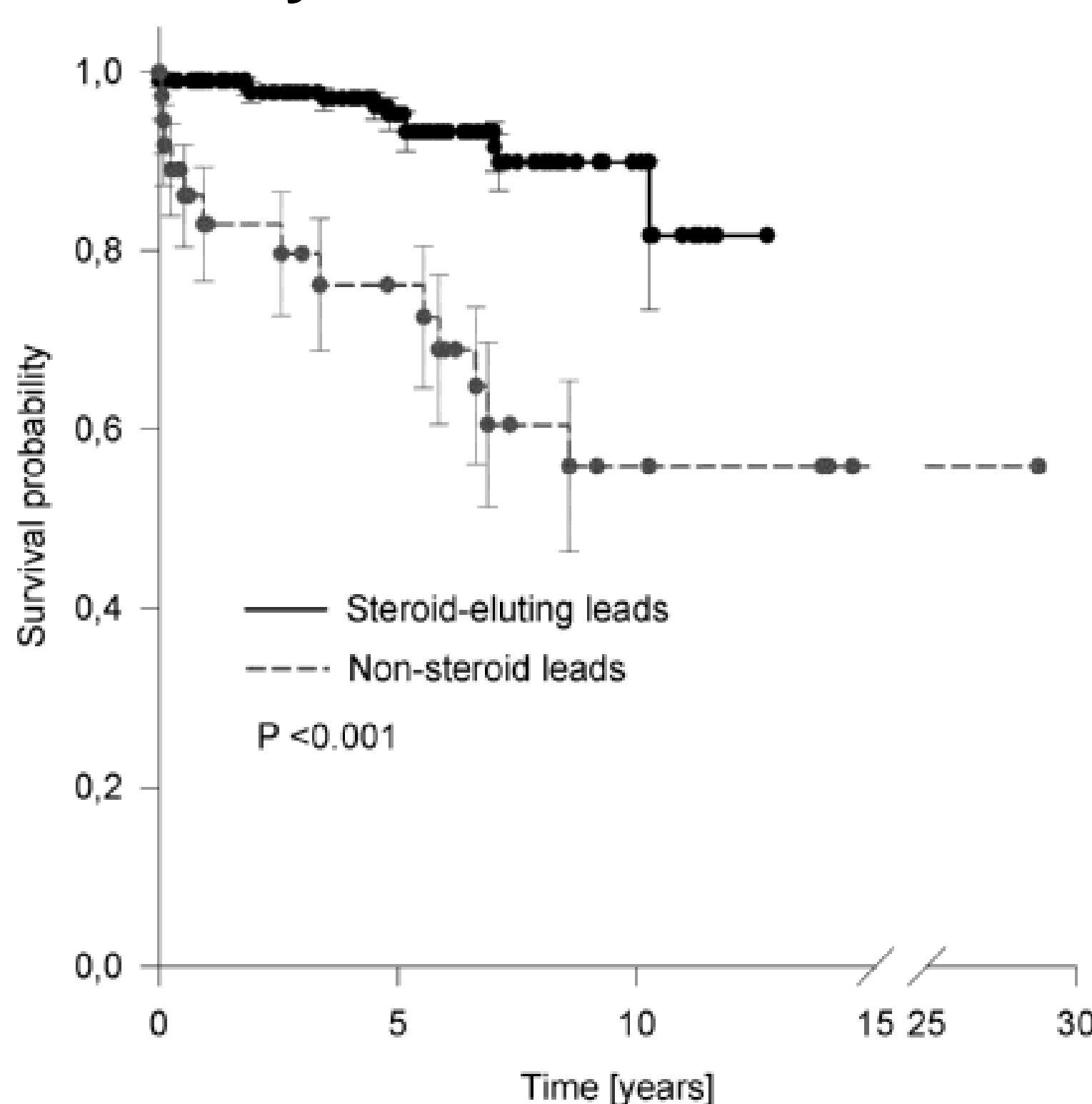
Epicardial pacemaker survival probability



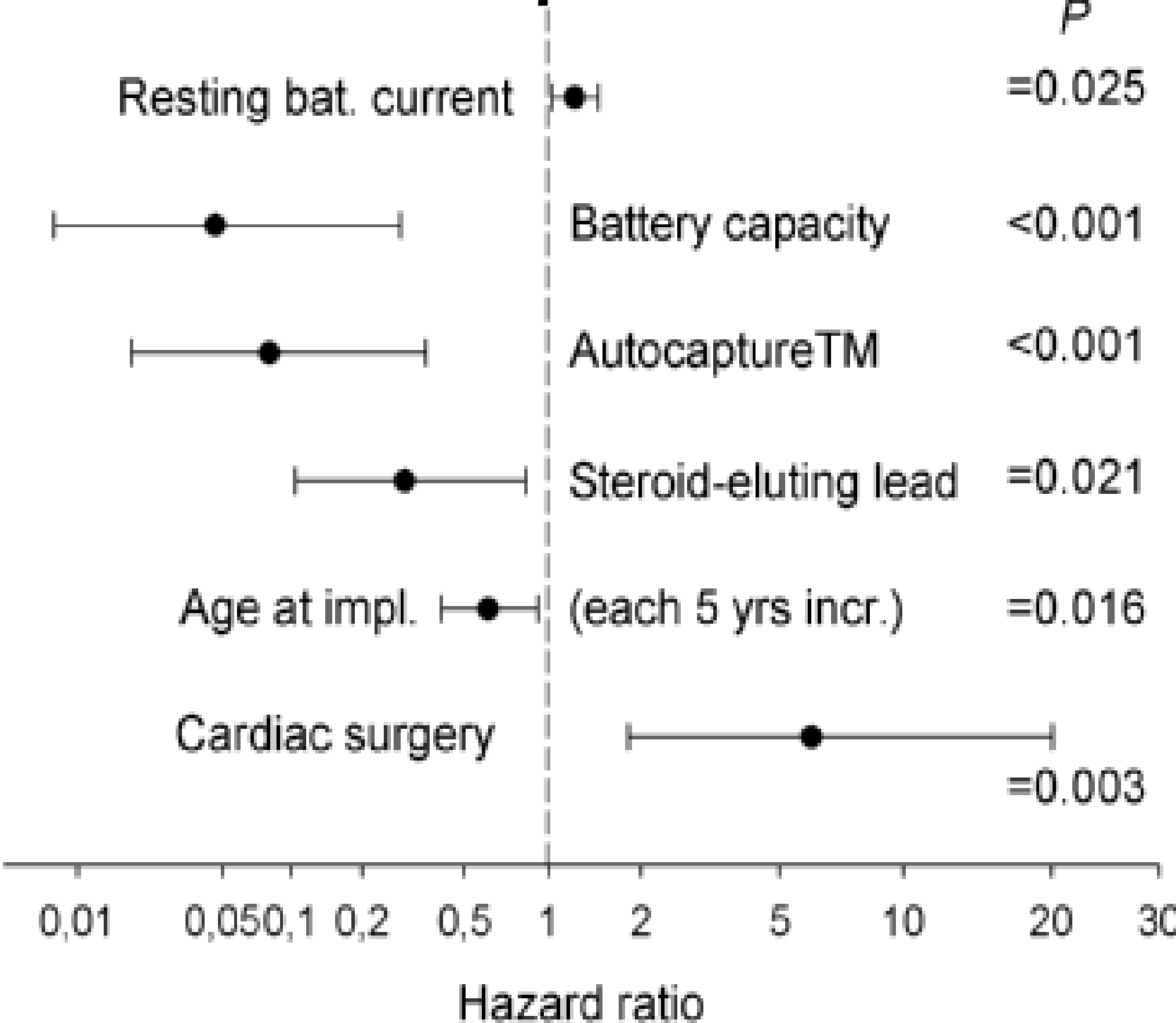
Probability of freedom from change to transvenous system by implantation era



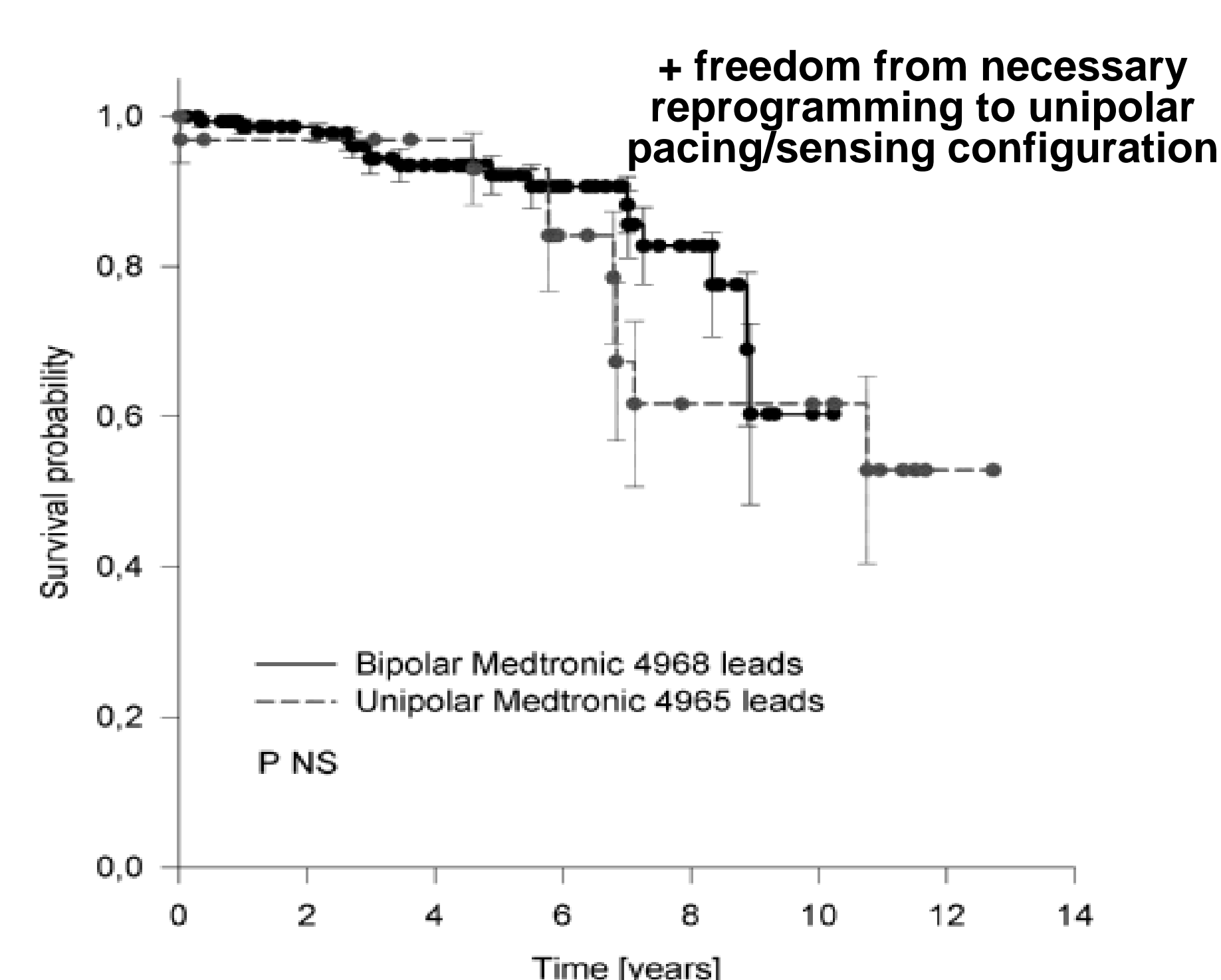
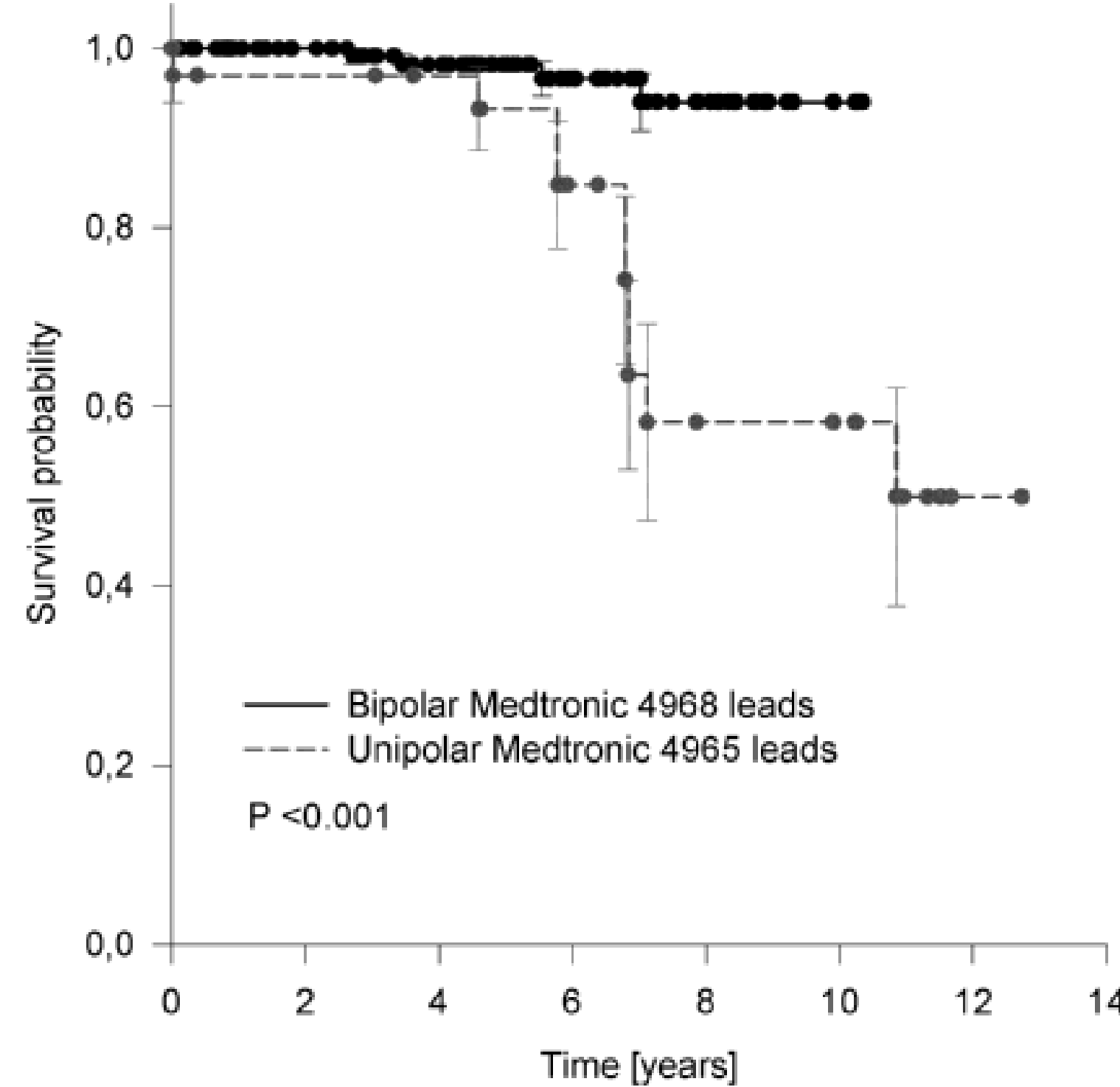
Probability of freedom from exit block



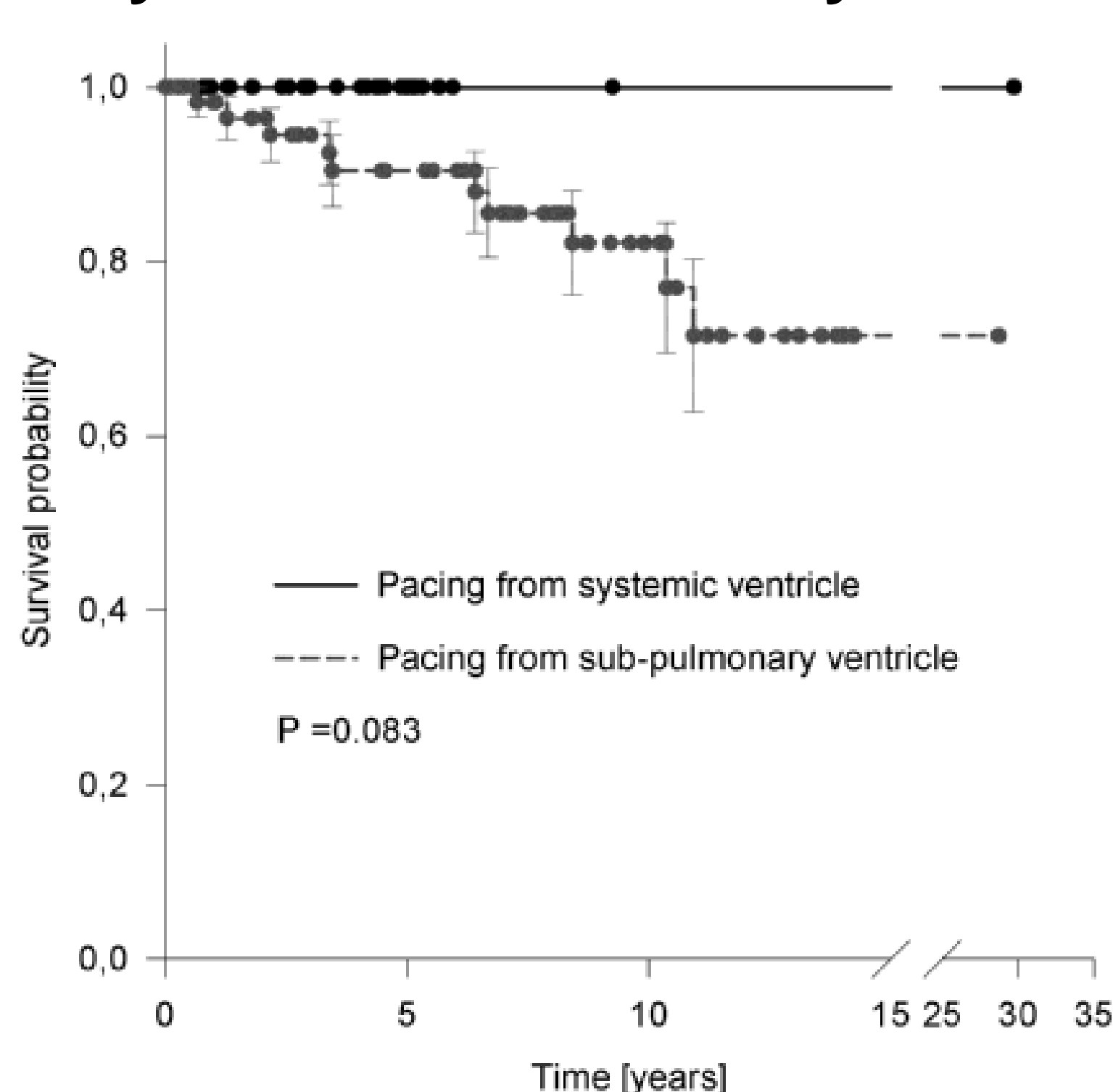
Factors affecting the risk of battery depletion



Probability of freedom from surgical re-intervention because of lead fracture, insulation break, outgrowth or exit block



Freedom from pacing-associated systemic ventricular dysfunction



Surgical revisions/complications:

- Surgical revision N=42 in 39/119 pts (32.8 %)
 - » Exit block/major increase in pacing threshold (N=17)
 - » Lead fracture/insulation break (N=7)
 - » Patient outgrowth (N=8)
 - » Pacing system infection in (N=6)
 - » Premature battery depletion (N=4)
- Death: 14/119 pts (11.7 %), all with CHD, no death related to pacing system failure
- Dyssynchronous systemic ventricular failure: 10/77 pts (13.0 %) paced initially from a single site at the subpulmonary or single ventricle

Conclusion:

- The probability of continued epicardial pacing in children was as high as ~75/60 % at 10/15 years after implantation, increased in recent implantation era and allowed to defer transvenous pacing to a significantly higher age
- The use of bipolar steroid-eluting leads and of a beat to beat capture tracking feature significantly increased pacing system longevity and decreased the need for surgical re-interventions
- Fracture of the indifferent lead wire does occur in bipolar Medtronic 4968 leads, but may be resolved by reprogramming into unipolar configuration eliminating the necessity of surgical re-intervention

Disclosure:

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