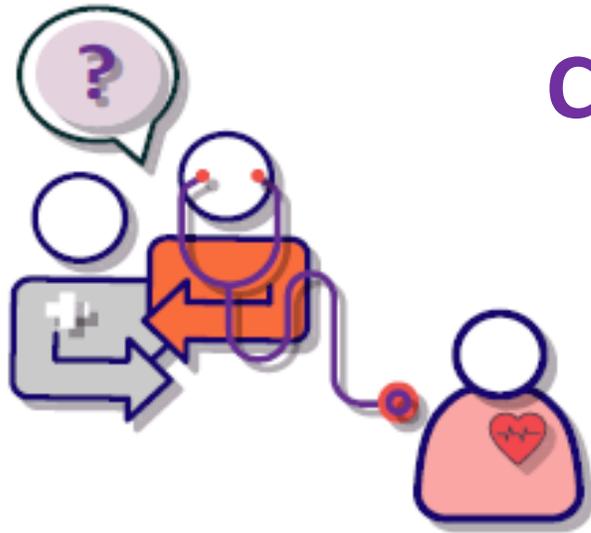


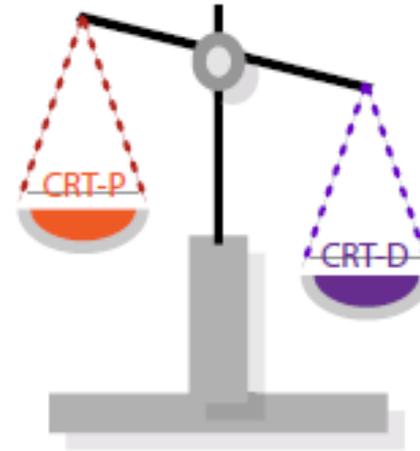
AKO SA STALA „DIERA“ V CRT-P DIEROU NA TRHU

*Luboš Urban, Michal Šašov, Peter Margitfalvi
NÚSCH a.s., Bratislava*

**ČESKÉ A SLOVENSKÉ
SYMPOZIUM O ARYTMIIÁCH
A KARDIOSTIMULACI**

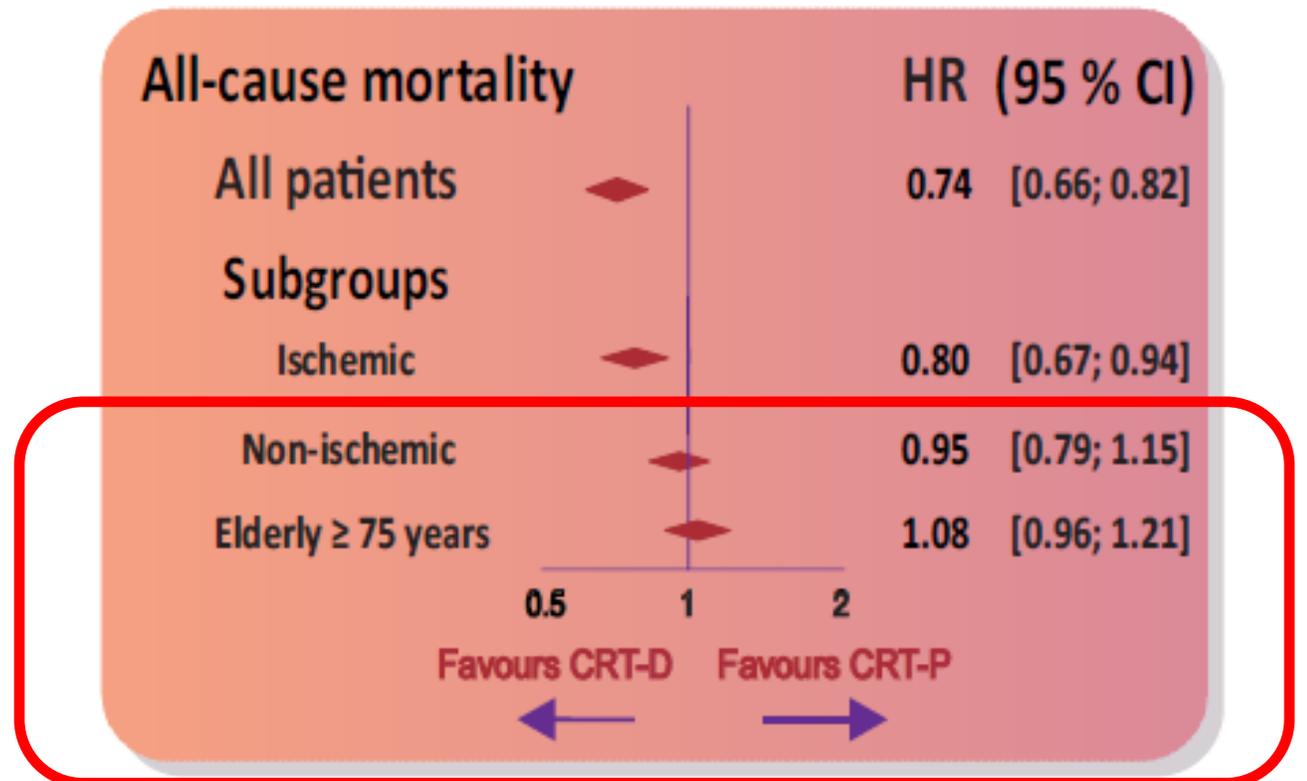
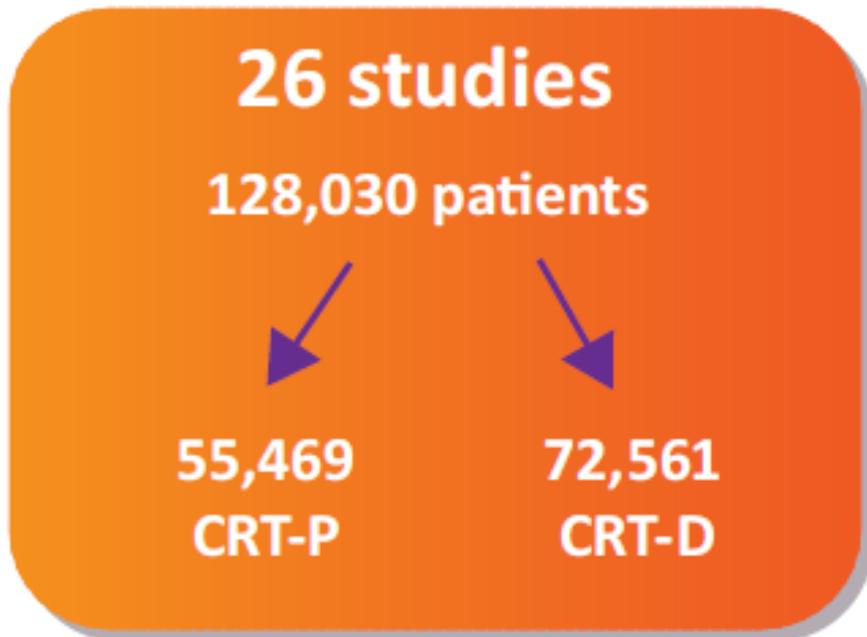


CRT-D vs CRT-P



-26% RR ↓

Metaanalýza observačních štúdií

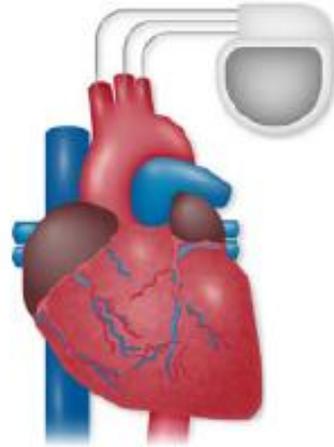


Prežívanie pac. CRT s alebo bez defibrilátora: projekt RESET-CRT.

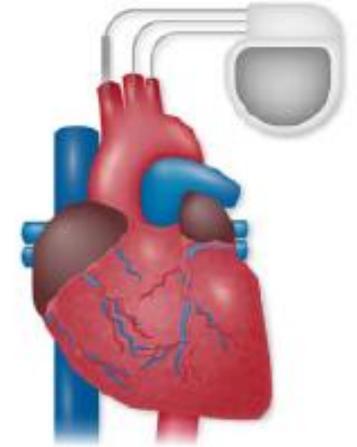
Observational part of the RESET-CRT project mimicking the RESET-CRT randomized trial



 **847** CRT-P patients

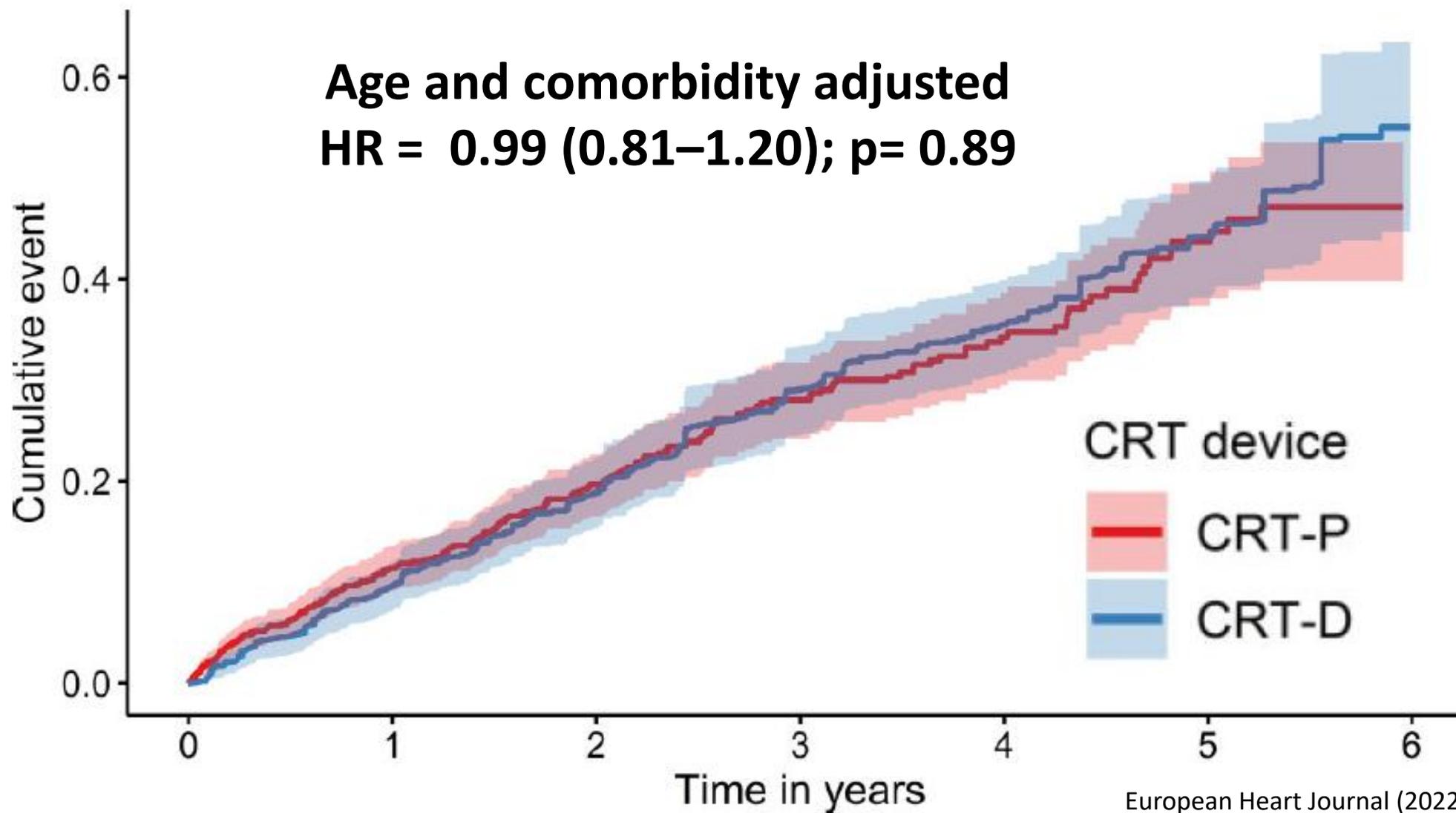


 **2722** CRT-D patients

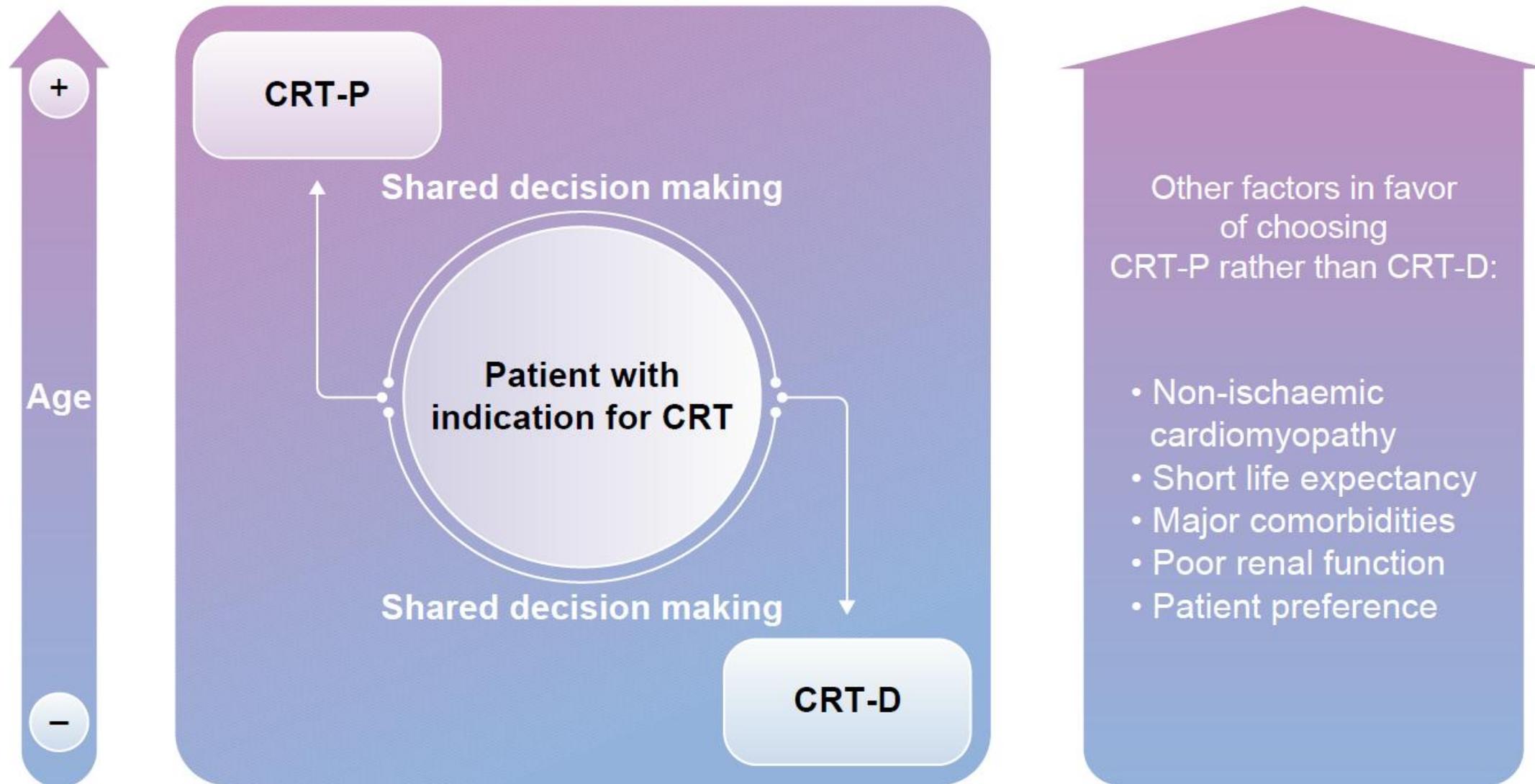


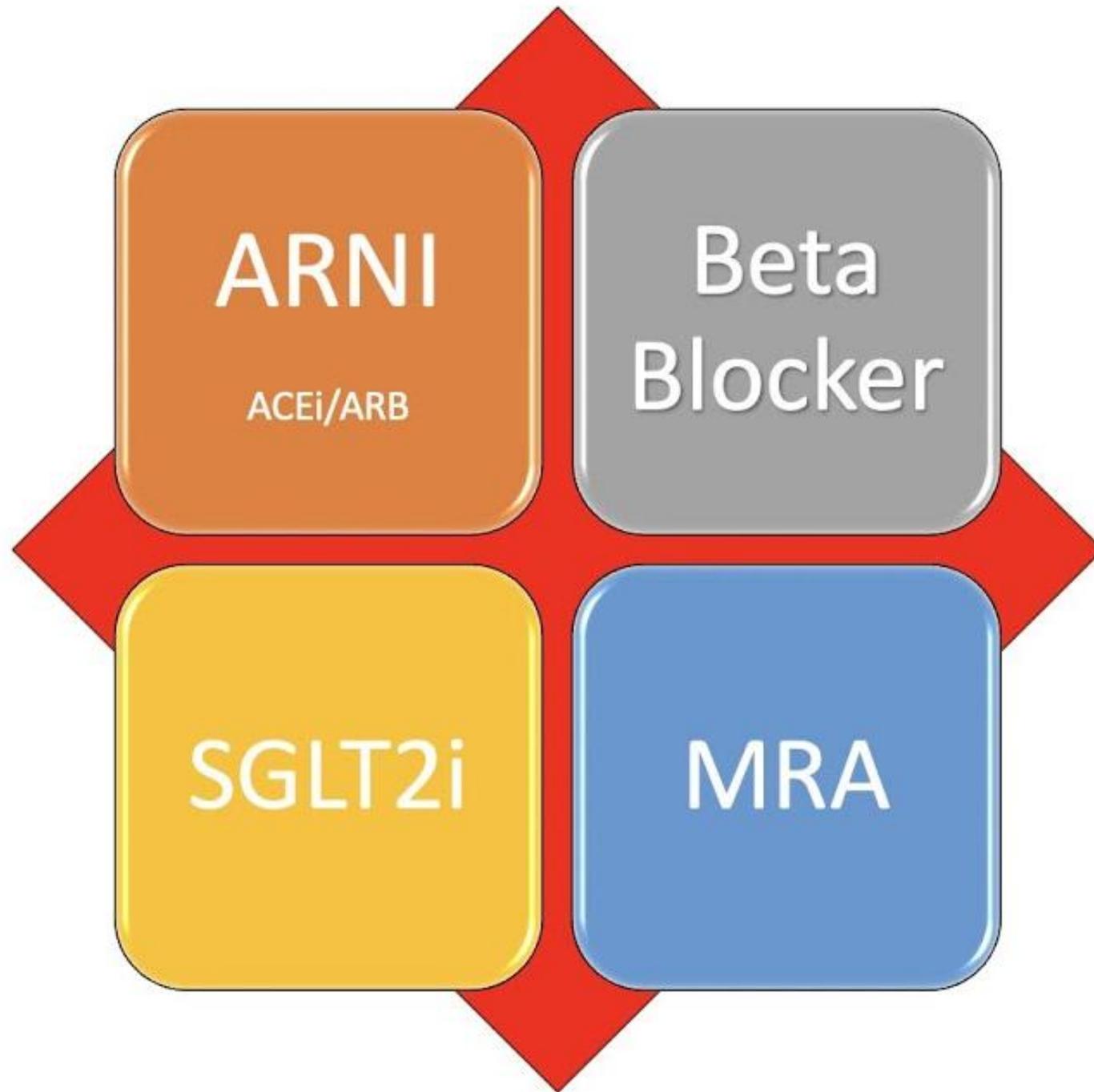
- Pac. s CRT-P boli v priemere o 6,7 roka starší ako pacienti s CRT-D
- Etiológia srdcového zlyhávania bola porovnateľná **(1/4 non ischemická KMP)**
- Medián FU = 2,35 roka: 203 úmrtí (24 %) u pacientov s CRT-P a 511 úmrtí (19 %) u pacientov s CRT-D
- Vekové rozdiely vysvetľovali väčšinu rozdielov v prežívaní.

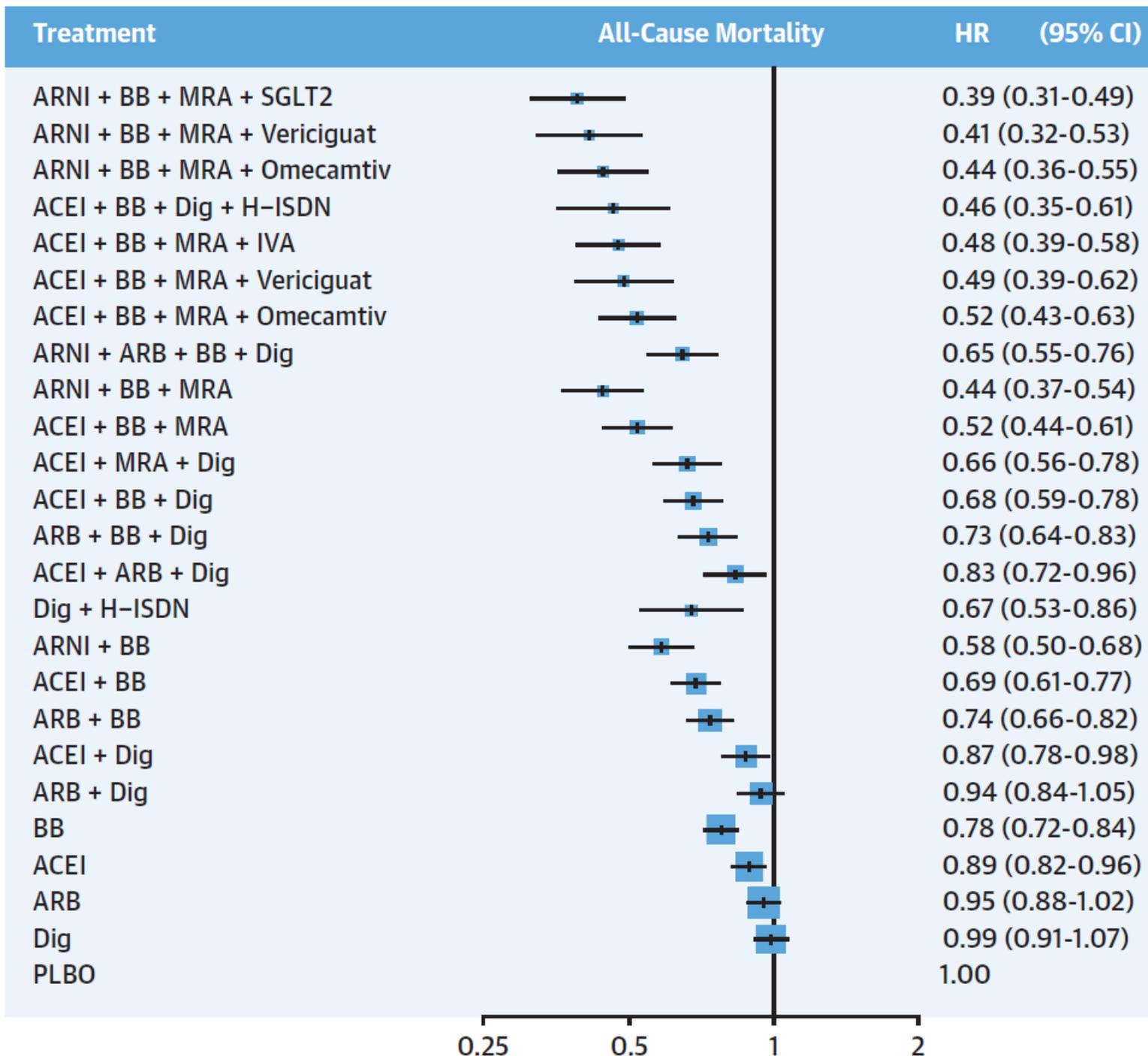
Celková mortalita pac. CRT s alebo bez defibrilátora projekt RESET-CRT



V čase implantácie CRT-D/P aj v čase výmeny CRT-D/P







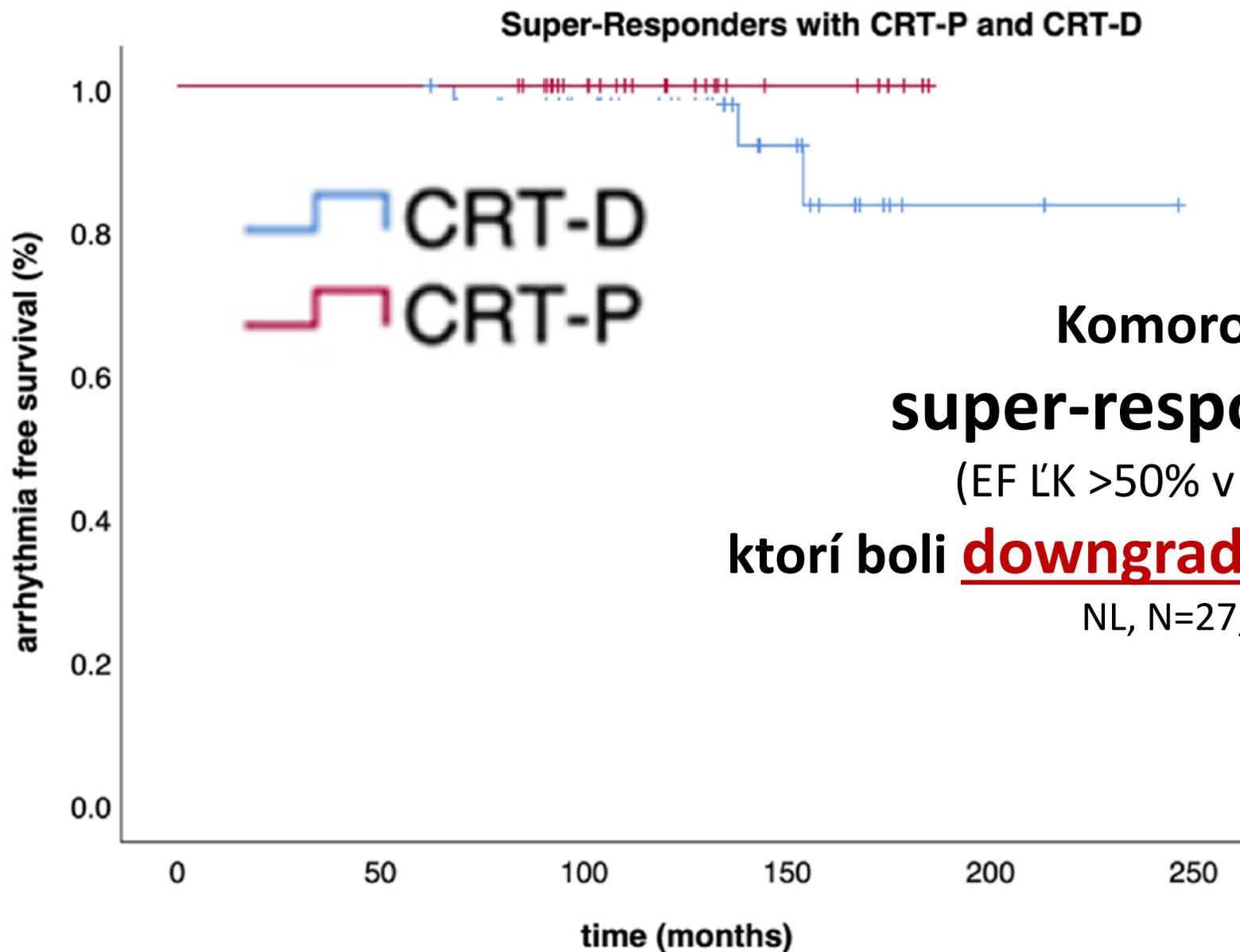
Relatívne zníženie rizika
celkovej mortality
 pri rôznych kombináciách
 farmakologickej liečby
 srdcového zlyhávania

ERI batérie CRT-D

Výmena CRT-D alebo downgrade na CRT-P?

Rozhodovanie ovplyvňujú:

1. Riziko náhlej smrti- výskyt KT/KF počas životnosti CRT-D
2. Klinická e ECHO, BLOCH efektivita CRT (superresponderi, responderi, non- responderi)
3. Riziko nearytmickej smrti- celkový stav a komorbidity
4. Etické otázky- pacientovo želanie, otázky konca života
5. Technické aspekty
6. Nákladová efektivita



**Komorové arytmie u
super-responderov na CRT**
(EF LK >50% v čase výmeny CRTD),
ktorí boli **downgradovaný na CRT-P systém**
NL, N=27, Median FU 38m

Adekvátne intervencie CRT-D u pac., ktorí podstupujú výmenu zariadenia

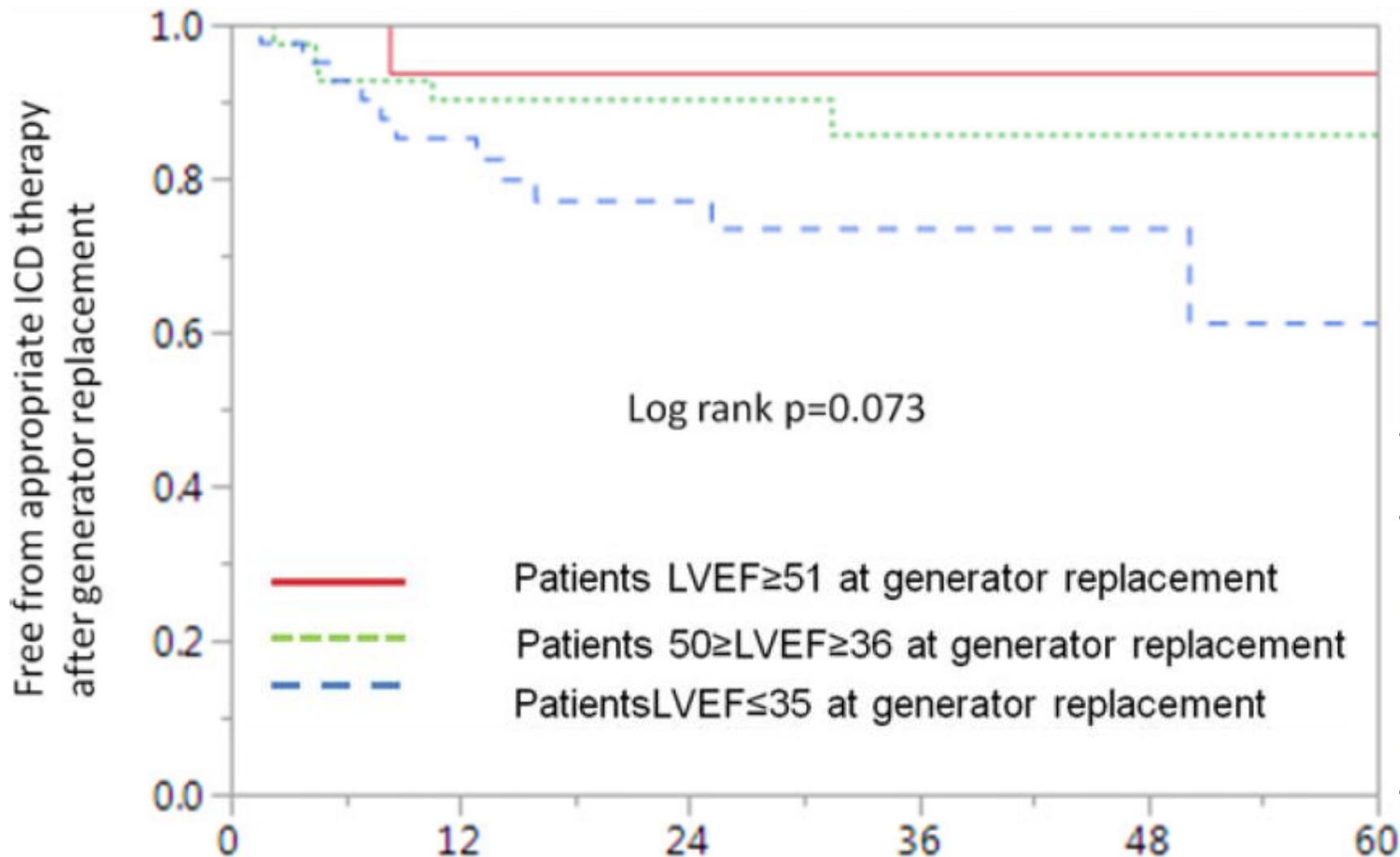
Je čas na downgrade z CRT-D na CRT-P?

Observačná analýza DECODE CRT-D

IHD/DCM, n (%)	LVEF, n (%)	Prevention, n (%)	With appropriate therapy after ICD replacement, n (%)
Ischaemic, 174 (52.4%)	LVEF ≤35%, 124 (71.3%)	Secondary prevention, 52 (41.6)	16 (30.8)
		Primary prevention, 72 (58)	14 (19.4)
	LVEF >35%, 50 (28.7%)	Secondary prevention, 22 (44%)	5 (22.7)
		Primary prevention, 28 (56)	2 (7.1)
Non Ischemic, 158 (47.6%)	LVEF ≤35%, 90 (57%)	Secondary prevention, 38 (42.2)	7 (18.4)
		Primary prevention, 52 (57.8)	7 (13.4)
	LVEF >35%, 68 (43%)	Secondary prevention, 26 (38.2)	3 (11.5)
		Primary prevention, 42 (61.8)	3 (7.1)

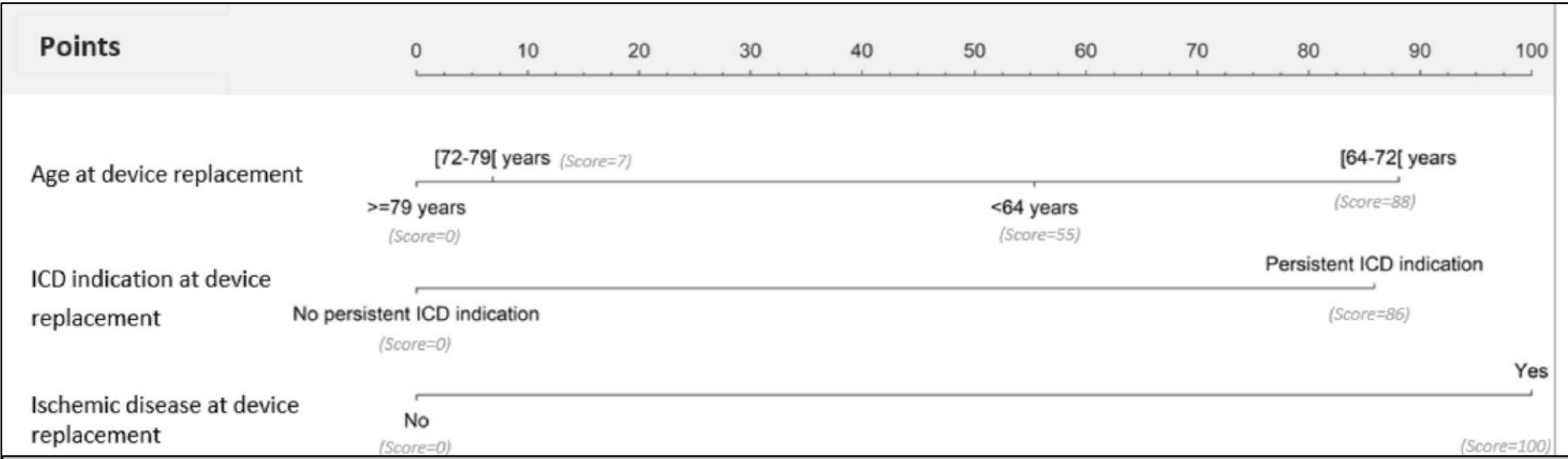
U pac. s **non-ischemickou KMP s EF>35** v čase výmeny ICD (**PP NKS**) sa počas medianu FU 406,5 (362–533) dní vyskytla **adekvátna terapia ICD pre KT/KF u 7% pac.**

Výskyt KT/KF th ICD po výmene CIED u pac. bez ICD th (PPNKS) podľa EF LK >51 %, EF medzi 50 % a 36 % a EF pod 35%

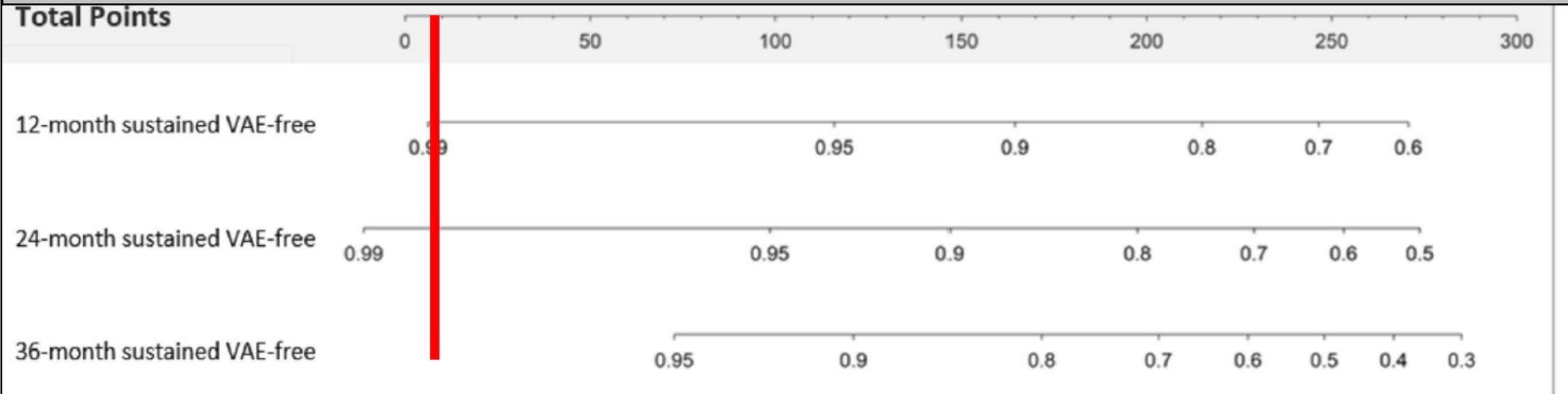


**Žiadne prediktory
adekvátnej ICD terapie
v takejto vzorke pac.**

	Univariate		
	HR	95% CI	P Value
Male	0.80	0.35-2.98	0.8522
Age > 70 years	1.18	0.43-3.09	0.7282
BMI > 30	0.82	0.28-2.39	0.7120
Caucasian	0.52	0.19-1.66	0.2537
Ischemic cardiomyopathy	1.28	0.43-3.14	0.7027
LVEF ≤ 35 at generator replacement	5.55	1.11-8.59	0.0290
Hypertension	0.51	0.20-1.38	0.1823
Diabetes	1.16	0.37- 3.14	0.7813
Atrial fibrillation	1.33	0.51-3.56	0.5520
CKD (estimated GFR < 60)	0.59	0.09-2.11	0.4602
β-blocker	0.58	0.17-3.72	0.5090



Riziko KT/KF u 72r. pac. s non-ischemickou KMP s EF LK>35%, bez indikácie k ICD v čase jeho výmeny



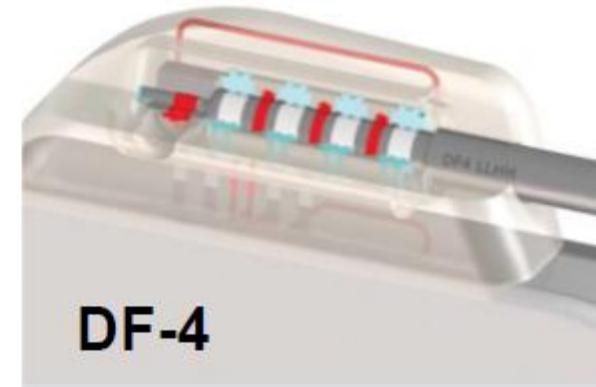
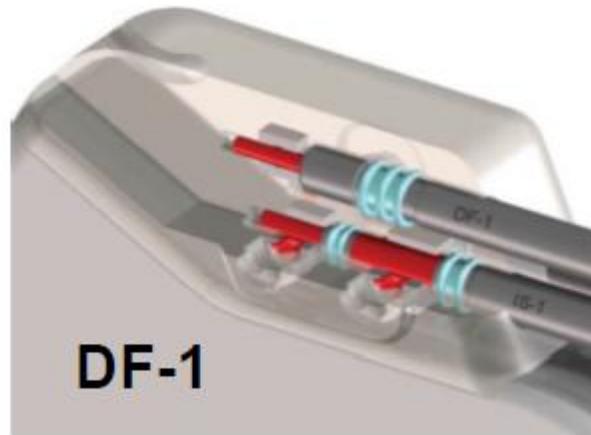
Downgrade na CRT-P:

- **Super-responder bez KT/KF**
- **NYHA IV**
(okrem kandidátov na LVAD, HTx)
- **Nonischemická KMP**
- **závažné ochorenie obličiek**
(dialýza, K/DIGO 4, resp. 5)
- **početné extrakardiálne komorbidity**
(DM, PAO, CHOCHP, Ca)
- **Krehký („frail“) pacient**
- **Vek nad 70-75 rokov**

Ponechanie CRT-D:

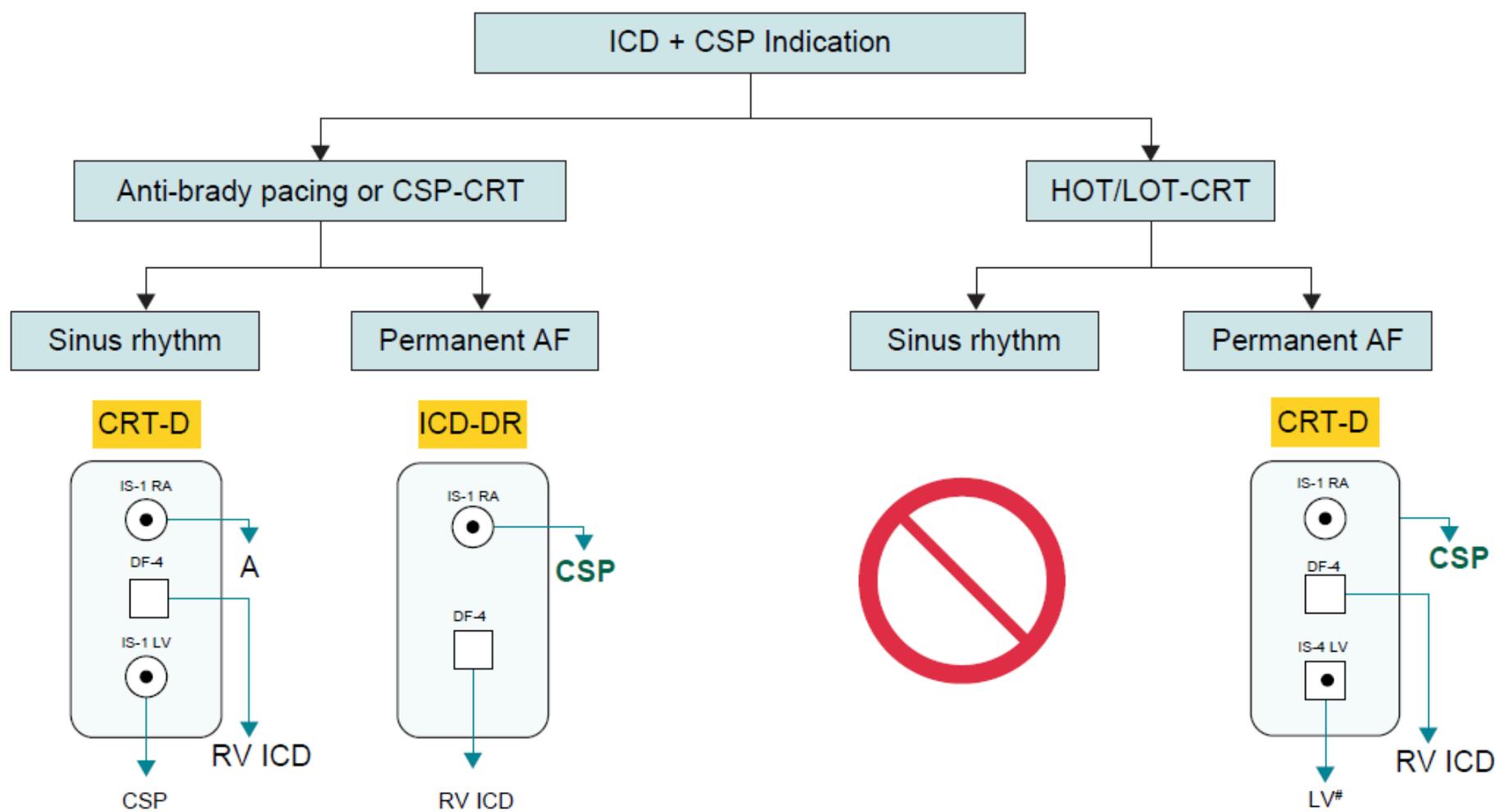
- **KT/KF počas životnosti CRTD**
- **EF LK \leq 35%**
- **ischemická genéza SZ**
- **Non-ischemická etiológia SZ u mladších pac.**
(< 59, resp. < 68 rokov)
- **zachovaná funkcia obličiek**
- **priaznivý profil komorbidít**
- **DF4 + IS4 konektor**

Balancing benefits of ICD lead standards



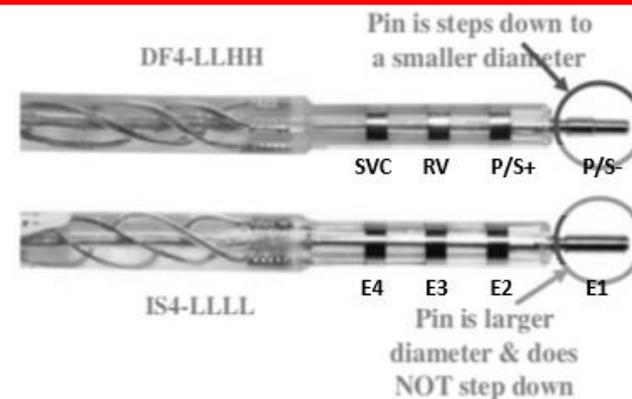
- Downgrade of an ICD or a CRT-D → PM or CRT-P
- Upgrade to CSP without a new ICD generator
- Economical form of CRT with CSP (using VR or DR ICDs instead of CRT-D)
- Addition of a PM lead in case of electrical issues with the pace-sense component of the ICD lead
- Possibility to switch IS-1 pins in a CRT-D with a bipolar LV port (e.g. in patients with an ICD lead under recall)
- Addition of a standalone coil in case of high defibrillation threshold with a single-coil ICD lead

- Convenience at implantation
- Absence of risk of high voltage pin switch on the header
- Less volume in the pocket (essentially due to absence of a lead yoke)



**DF-4 – IS-1 CRT-D
na CRT-P**

**IS-1 LV do IS-1 RV
DF-4 RV do IS-4 LV**



1.8.2020 – 31.7.2025

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výmen CRT-D

PRIMO CRT-D

Primárna prevencia NKS

261 pac. (79%)

PRIMO CRT-D

Sekundárna prevencia NKS

70 pac. (21%)

Ischemická KMP

99 pac. (38%)

Non-ischemická KMP

162 pac. (62%)

DF-1 (IS-1, IS-4)

75 pac. (46%)

DF-4 - IS-4

87 pac. (54%)

Priemerný FU $6,8 \pm 3,2$ r.

PP → SP

26 pac. (30%)

PP = PP

61 pac. (70%)

NYHA ≥ II

EF ĽK ≤ 30%

6 pac.

NYHA I

EF ĽK > 30%

55 pac.

1.8.2020 – 31.7.2025

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331

výměn CRT-D

Primárna prevencia NKS

Non-ischemická KMP

PP = PP

Bez KT/KF počas FU

v čase výmeny

klinický a ECHOkg responder

NYHA I

EF ĽK >30%

Kandidát na
= Downgrade
na CRT-P

Ale pre inkompatibilitu
DF-4 – IS-4 el. s CRT-P
realizovaná výmena
na CRT-D
55 pac. – 17%

Downgrade na CRT-P:

- **Super-responder bez KT/KF**
- **NYHA IV**
(okrem kandidátov na LVAD, HTx)
- **Nonischemická KMP**
- **závažné ochorenie obličiek**
(dialýza, K/DIGO 4, resp. 5)
- **početné extrakardiálne komorbidity**
(DM, PAO, CHOCHP, Ca)
- **Krehký („frail“) pacient**
- **Vek nad 70-75 rokov**

Ponechanie CRT-D:

- **KT/KF počas životnosti CRTD**
- **EF LK \leq 35%**
- **ischemická genéza SZ**
- **Non-ischemická etiológia SZ u mladších pac.**
(< 59, resp. < 68 rokov)
- **zachovaná funkcia obličiek**
- **priaznivý profil komorbidít**

DF4 + IS4 konektor

17% pac s CRT-D

1.8.2020 – 31.7.2025

NÚSCH a.s.

331

výměn CRT-D

1.8.2020 – 31.7.2025

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406

PRIMO CRT-D

4 pac. – DF-1 CRTD

26 pac. – IS-1 (LV)

Primárna prevencia NKS

Non-ischemická KMP

PP = PP

Bez KT/KF počas FU

v čase výmeny

klinický a ECHOkg responder

NYHA I

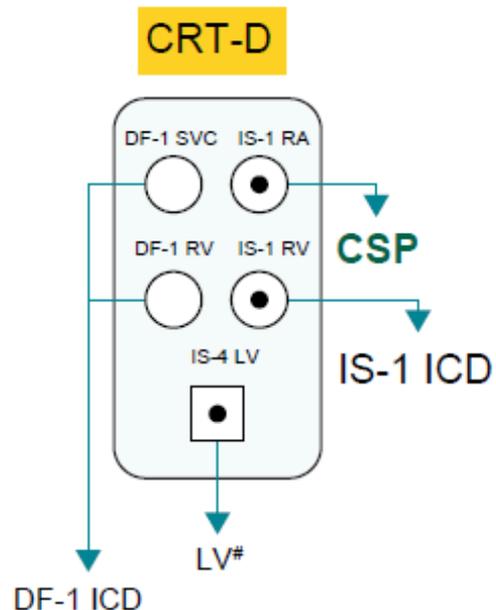
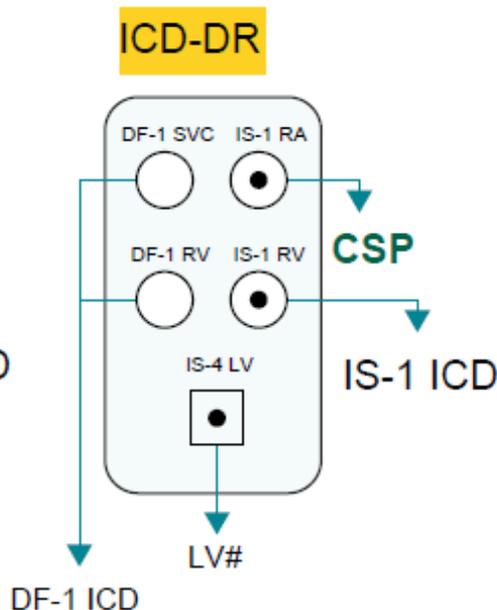
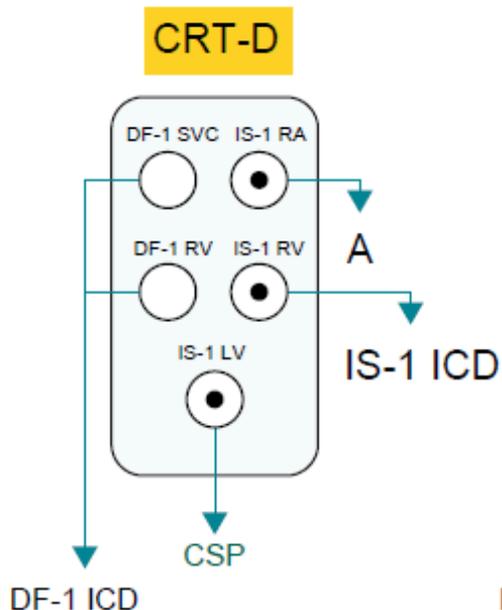
EF ĽK >30%

Kandidát na
= Downgrade
na CRT-P

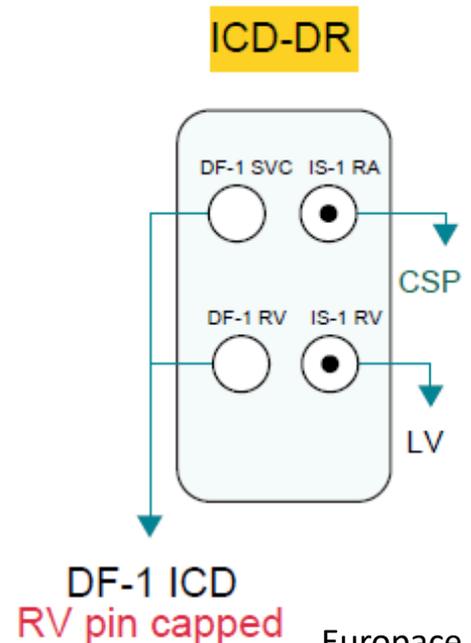
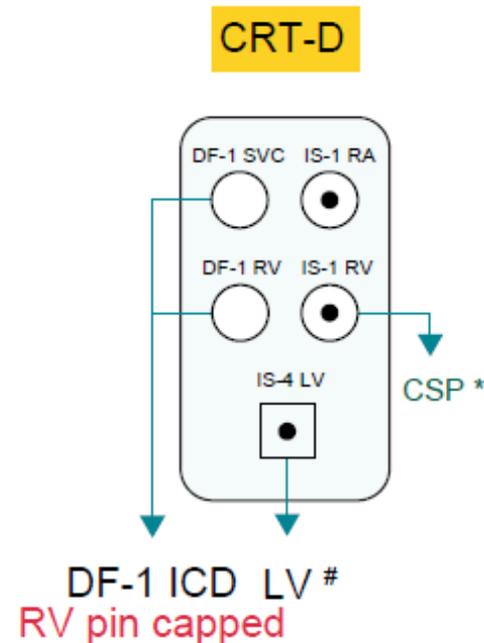
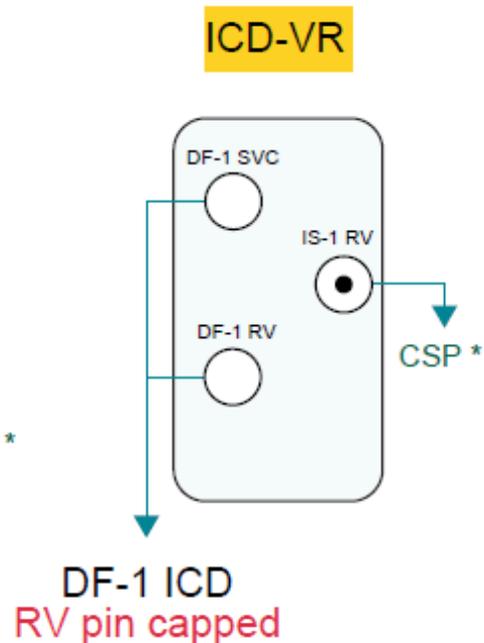
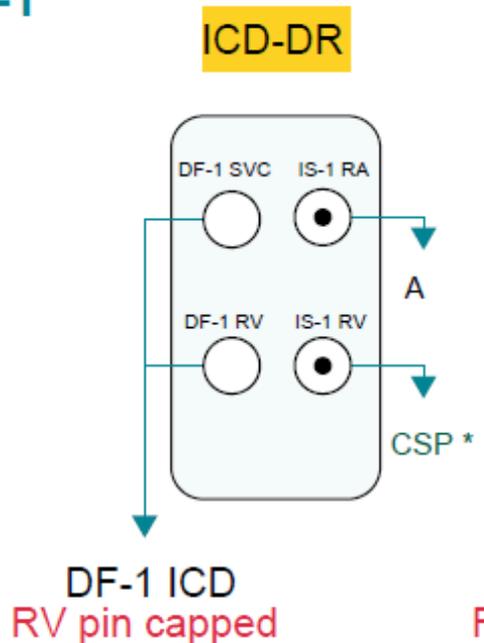
Ale pre inkompatibilitu
DF-4 – IS-4 el. s CRT-P
realizovaná výmena
na CRT-D

55 pac. – 17%

Nové výzvy DF-1 ICD konektora



DF-1



ĎAKUJEM ZA POZORNOST

