

REBOOT-CNIC

TOMÁŠ HNÁT

Kardiologická klinika 2. LF UK a FN Motol

30.11.2025



FN MOTOL



**KARDIOLOGICKÁ
KLINIKA**
2. LF UK a FN MOTOL



**2. LÉKAŘSKÁ
FAKULTA**
UNIVERZITA
KARLOVA

ÚVOD A KONTEXT

- Použití betablokátorů je u pacientů po akutním koronárním syndromu široce akceptováno i při absenci projevů srdečního selhání
- 2023 ESC guidelines doporučují dlouhodobou terapii betablokátozem u pacientů s AKS:

Betablokátozy se doporučují u pacientů s AKS s EF LK $\leq 40\%$ bez ohledu na symptomy srdečního selhání.

I

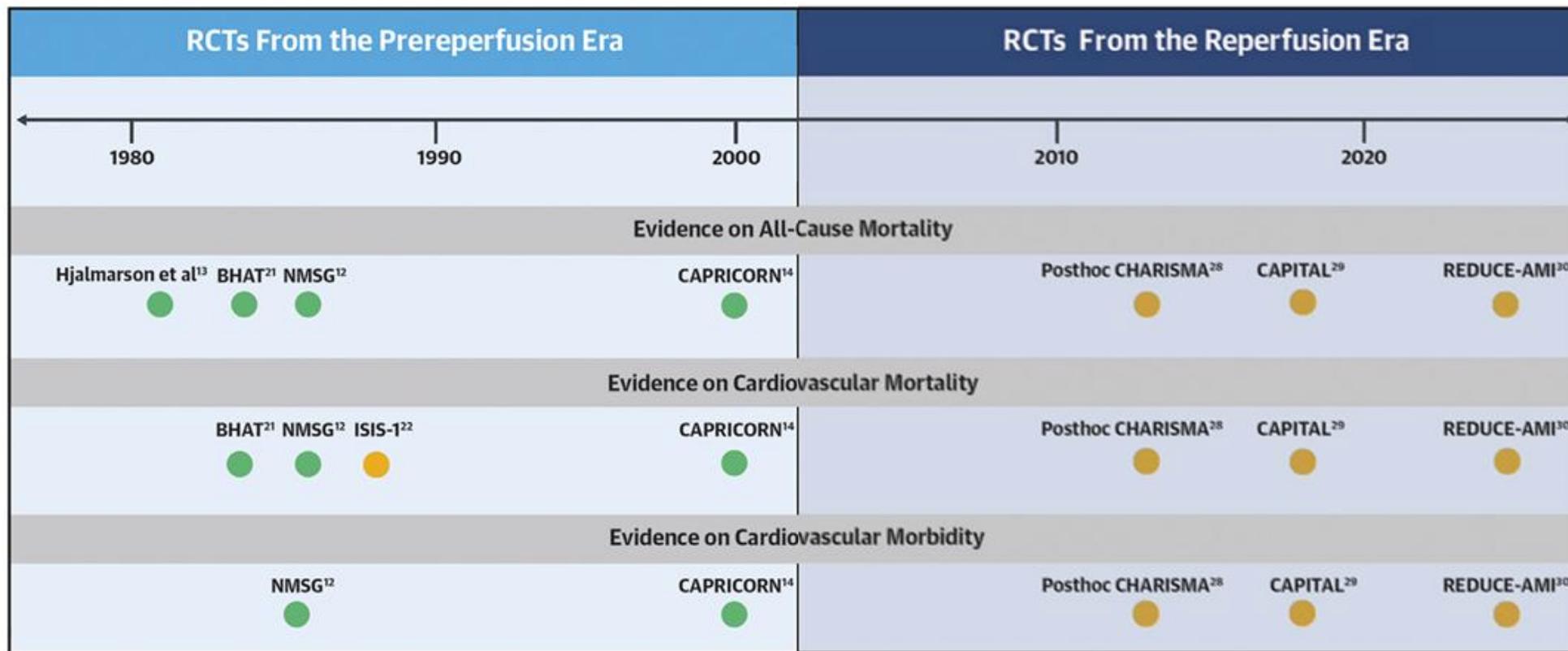
A

Rutinní použití betablokátorů u všech pacientů s AKS bez ohledu na EF LK by mělo být zvaženo.

IIa

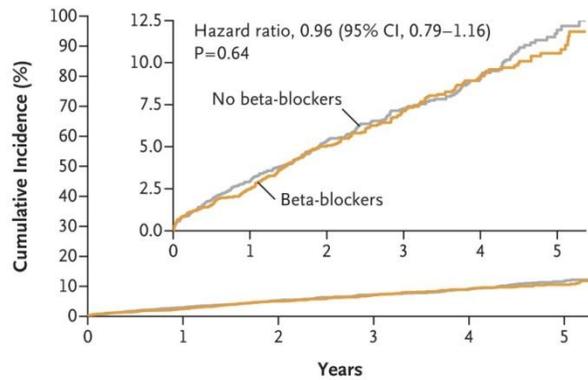
B

- Benefit u pacientů po IM bez snížené ejekční frakce levé komory je nejistý



Traffic Light System: ● Evidence of positive association ● No evidence of association

A Death from Any Cause or New Myocardial Infarction (primary end point)

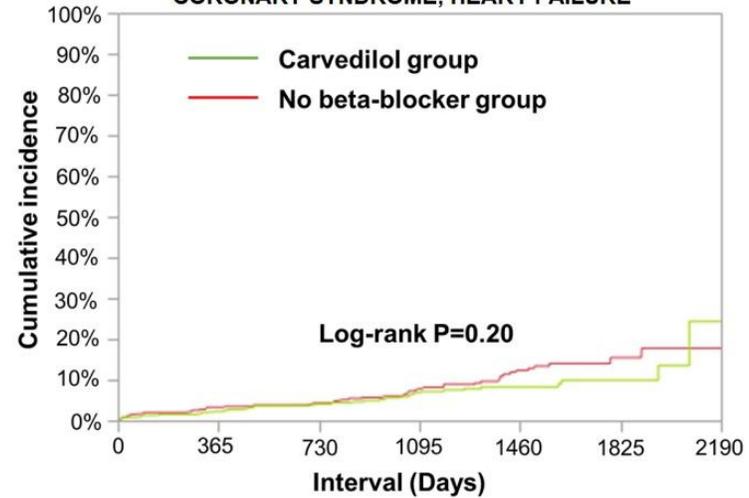


No. at Risk		0	1	2	3	4	5
No beta-blockers	2512	2299	1898	1417	963	416	
Beta-blockers	2508	2311	1911	1422	975	422	

REDUCE-AMI

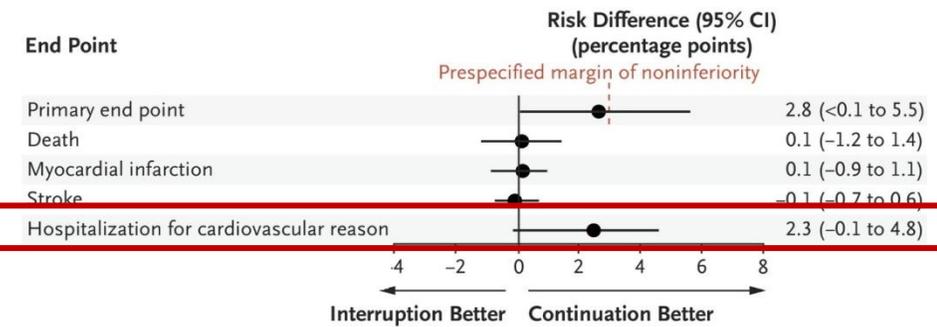
Yndiegn T C et al. N Eng J Med 2024;390(15)

(A) DEATH, MYOCARDIAL INFARCTION, ACUTE CORONARY SYNDROME, HEART FAILURE



CAPITAL-RCT

Watanabe H et al. Plos One 2018;13(8)



ABYSS

Silvain J et al. N Eng J Med 2024;391(14)

DESIGN STUDIE REBOOT

- Multicentrická, randomizovaná, open-label prospektivní studie
- 8505 pacientů s akutním koronárním syndromem a EF levé komory > 40 % v čase dimise s randomizací do skupiny léčené betablokátozem a skupiny bez betablokátoru
- Primární cílový ukazatel složený z celkové mortality + infarktu myokardu + hospitalizace pro srdeční selhání

Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Beta-Blocker (N = 4207)	No Beta-Blocker (N = 4231)
Age — yr	61.4±11.2	61.3±11.1
Female sex — no. (%)	816 (19.4)	811 (19.2)
Left ventricular ejection fraction		
Value — %	57.0±7.1	57.2±7.1
<50% — no. (%)	515 (12.2)	464 (11.0)
Country of enrollment — no. (%)		
Spain	3260 (77.5)	3283 (77.6)
Italy	947 (22.5)	948 (22.4)
Medical history — no./total no. (%)		
Arterial hypertension	2182/4200 (52.0)	2185/4214 (51.9)
Diabetes mellitus	901/4191 (21.5)	893/4200 (21.3)
Dyslipidemia	2158/4199 (51.4)	2166/4214 (51.4)
Current smoker	1851/4095 (45.2)	1824/4115 (44.3)
Previous myocardial infarction	408/4200 (9.7)	394/4218 (9.3)
Previous stroke	86/4203 (2.0)	67/4215 (1.6)
Chronic obstructive pulmonary disease	145/4204 (3.4)	133/4218 (3.2)
Previous atrial fibrillation	91/4205 (2.2)	102/4215 (2.4)
Details of index hospitalization — no./total no. (%)		
Infarction type		
STEMI	2146/4207 (51.0)	2150/4231 (50.8)
NSTEMI	2061/4207 (49.0)	2081/4231 (49.2)
Multivessel disease	1073/4194 (25.6)	1104/4215 (26.2)
Type of revascularization		
None	207/4177 (5.0)	190/4190 (4.5)
Percutaneous coronary intervention	3906/4177 (93.5)	3925/4190 (93.7)
Coronary-artery bypass grafting	6/4177 (0.1)	10/4190 (0.2)
Complete revascularization achieved	3464/3935 (88.0)	3484/3940 (88.4)
Medication at discharge — no./total no. (%)		
Type of beta-blocker		
Atenolol	26/4131 (0.6)	—
Bisoprolol	3549/4131 (85.9)	—
Carvedilol	128/4131 (3.1)	—
Metoprolol	309/4131 (7.5)	—
Nebivolol	114/4131 (2.8)	—
Other	5/4131 (0.1)	—
Aspirin	4136/4201 (98.5)	4165/4226 (98.6)
P2Y12 inhibitor	4120/4203 (98.0)	4129/4225 (97.7)
Angiotensin-converting–enzyme inhibitor or angiotensin-receptor blocker	3040/4193 (72.5)	3269/4223 (77.4)
Statin	4130/4202 (98.3)	4161/4224 (98.5)
Aldosterone-receptor antagonist	93/4193 (2.2)	84/4215 (2.0)
Oral anticoagulant	170/4198 (4.0)	164/4219 (3.9)
Ivabradine	20/4194 (0.5)	243/4221 (5.8)
Diuretic agent	366/4194 (8.7)	410/4220 (9.7)
Calcium-channel blocker	431/4194 (10.3)	515/4218 (12.2)

* Plus–minus values are means ±SD. Percentages may not sum to 100 because of rounding. NSTEMI denotes non–ST-segment elevation myocardial infarction, and STEMI ST-segment elevation myocardial infarction.

VÝSLEDKY

- Medián sledování 3.7 roku, nízké procento loss to follow-up (0.8 %, 71 pacientů)
- Bez statisticky významného rozdílu v primárním cílovém ukazateli mezi skupinou léčenou betablokátořem a skupinou bez betablokátořu (HR 1.04 [0.89-1.22], p=0.63)
- Bez statisticky významného rozdílu ve všech sekundárních cílových ukazatelech (jednotlivé komponenty primárního ukazatele + kardiovaskulární úmrtí + výskyt komorové tachykardie a fibrilace komor a zresuscitované náhlé srdeční smrti)

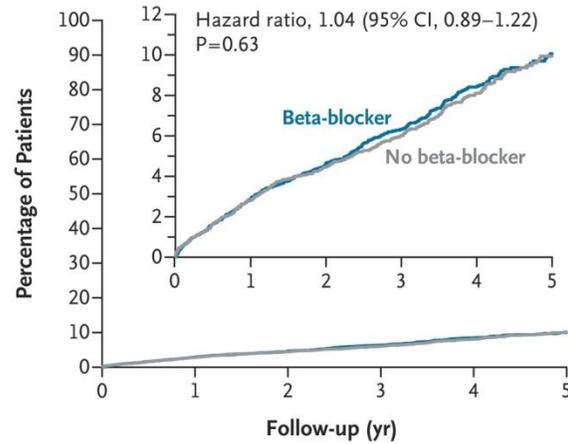
Table 2. Primary, Secondary, and Other Outcomes.

Outcome	Beta-Blocker <i>no. of patients (event rate per 1000 patient-yr)</i>	No Beta-Blocker	Rate Difference (95% CI)	Hazard Ratio (95% CI)*
Primary outcome				
Death from any cause, reinfarction, or hospitalization for heart failure	316 (22.5)	307 (21.7)	0.84 (-2.63 to 4.32)	1.04 (0.89 to 1.22)†
Secondary outcomes				
Death from any cause	161 (11.2)	153 (10.5)	0.66 (-1.75 to 3.07)	1.06 (0.85 to 1.33)
Reinfarction	143 (10.2)	143 (10.1)	0.09 (-2.26 to 2.43)	1.01 (0.80 to 1.27)
Hospitalization for heart failure	39 (2.7)	44 (3.0)	-0.32 (-1.56 to 0.92)	0.89 (0.58 to 1.38)
Death from cardiac causes	65 (4.5)	57 (3.9)	0.60 (-0.90 to 2.10)	1.15 (0.81 to 1.64)
Sustained ventricular tachycardia	3 (0.2)	2 (0.1)	0.07 (-0.23 to 0.38)	1.52 (0.25 to 9.08)
Ventricular fibrillation	3 (0.2)	5 (0.3)	-0.14 (-0.52 to 0.25)	0.61 (0.14 to 2.53)
Resuscitated cardiac arrest	4 (0.3)	4 (0.3)	0.00 (-0.38 to 0.39)	1.01 (0.25 to 4.05)
Tertiary outcomes				
Death from cardiac causes, stroke, or myocardial infarction	235 (16.8)	216 (15.3)	1.51 (-1.45 to 4.47)	1.10 (0.91 to 1.32)
Unplanned revascularization	170 (12.1)	171 (12.1)	0.02 (-2.55 to 2.59)	1.00 (0.81 to 1.24)
Safety outcomes				
Hospitalization for symptomatic advanced atrioventricular block	7 (0.5)	6 (0.4)	0.07 (-0.42 to 0.56)	1.18 (0.40 to 3.50)
Hospitalization for stroke	37 (2.6)	25 (1.7)	0.86 (-0.21 to 1.93)	1.50 (0.90 to 2.49)

* Hazard ratios were estimated with the use of Cox proportional-hazards models to compare the effect of beta-blocker therapy with that of no beta-blocker therapy. No adjustment for multiplicity was made for the analyses of the secondary and tertiary outcomes. The widths of the confidence intervals should not be used to infer a treatment effect.

† P=0.63 for the comparison of the beta-blocker group with the no-beta-blocker group. The P value was calculated with the use of a log-rank test.

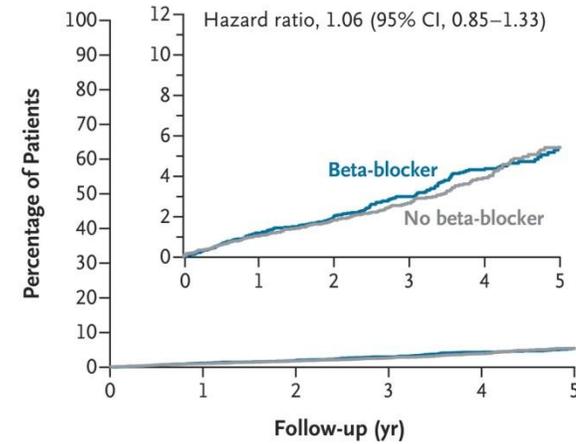
A Death from Any Cause, Reinfarction, or Hospitalization for Heart Failure



No. at Risk (no. of events)

Beta-blocker	4207 (120)	3868 (62)	3275 (52)	2364 (49)	1722 (21)	727
No beta-blocker	4231 (118)	3915 (58)	3312 (49)	2379 (49)	1725 (24)	713

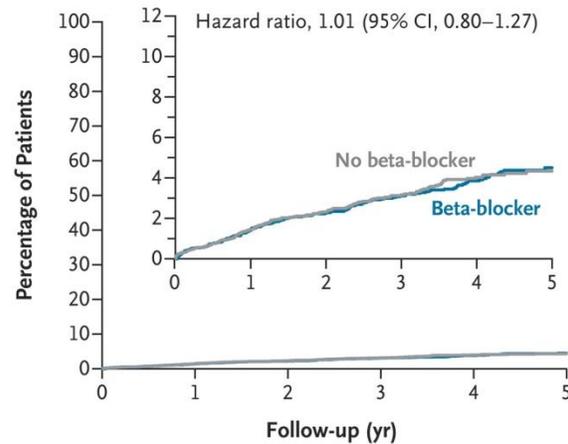
B Death from Any Cause



No. at Risk (no. of events)

Beta-blocker	4207 (50)	3937 (29)	3365 (30)	2439 (32)	1783 (12)	753
No beta-blocker	4231 (44)	3986 (28)	3402 (26)	2462 (29)	1788 (20)	739

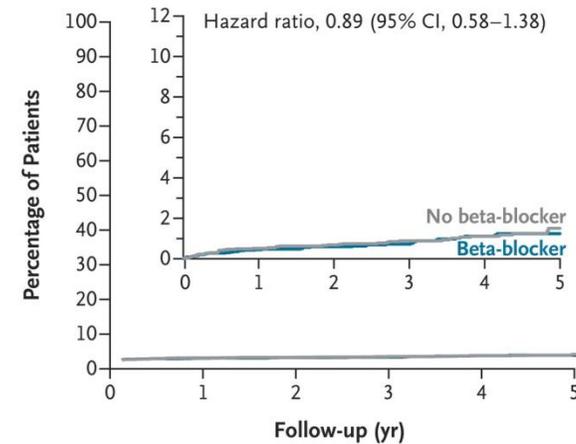
C Reinfarction



No. at Risk (no. of events)

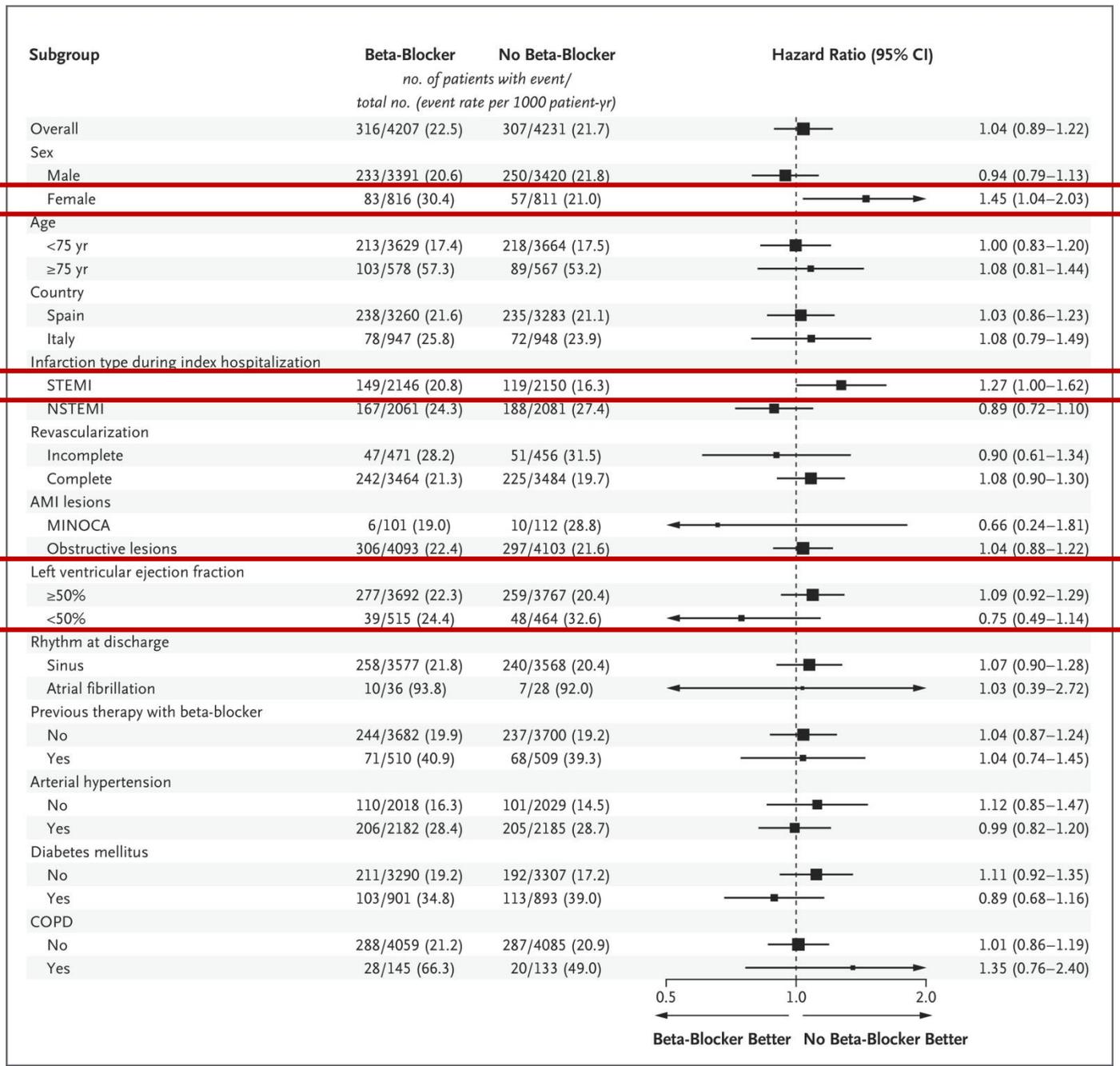
Beta-blocker	4207 (59)	3879 (29)	3288 (26)	2372 (16)	1729 (9)	729
No beta-blocker	4231 (60)	3931 (31)	3322 (26)	2383 (20)	1728 (4)	716

D Hospitalization for Heart Failure



No. at Risk (no. of events)

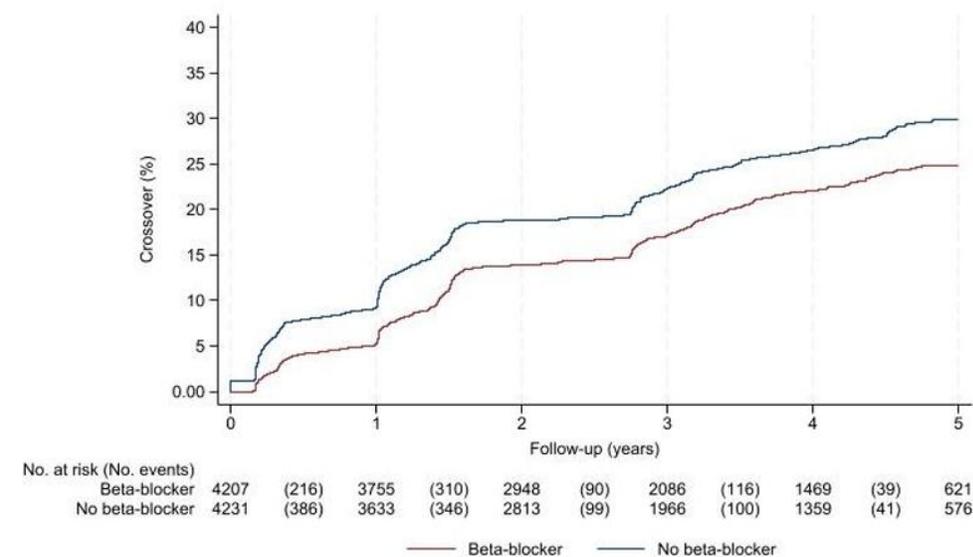
Beta-blocker	4207 (19)	3922 (5)	3348 (4)	2430 (9)	1774 (2)	751
No beta-blocker	4231 (22)	3967 (6)	3387 (6)	2453 (5)	1780 (4)	734



ADHERENCE / CROSSOVER

	BB	No BB
3 měsíce	94.9 %	9.3 %
15 měsíců	87.1 %	17.6 %
36 měsíců	81.9 %	22.9 %
48 měsíců	77.9 %	27.9 %

Figure S2. Time to Crossover According to Treatment Assignment.



- Riziko mitigace potenciálního léčebného benefitu
- Per-protocol analýza s obdobnými výsledky jako intention-to-treat

ZÁVĚR

- Terapie betablokátozem u pacientů po IM s eiekční frakcí LK > 40 % bez projevů srdečního selhání neměla žádný efekt na výskyt celkové mortality, reinfarktu myokardu či hospitalizace pro srdeční selhání.



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