MitraClip Treatment of Secondary MR in Heart Failure: Final 5-Year Results from COAPT

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Relevant Disclosures

Speaker honoraria: Abbott

Consulting fees or equity: Neovasc, Ancora, Valfix, Cardiac Success

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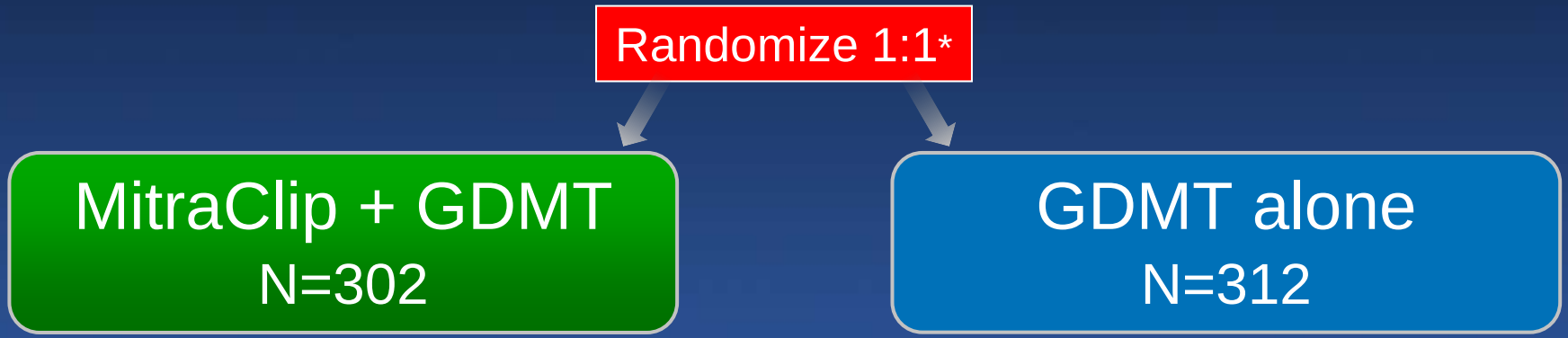
The COAPT Trial

Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients with Functional Mitral Regurgitation

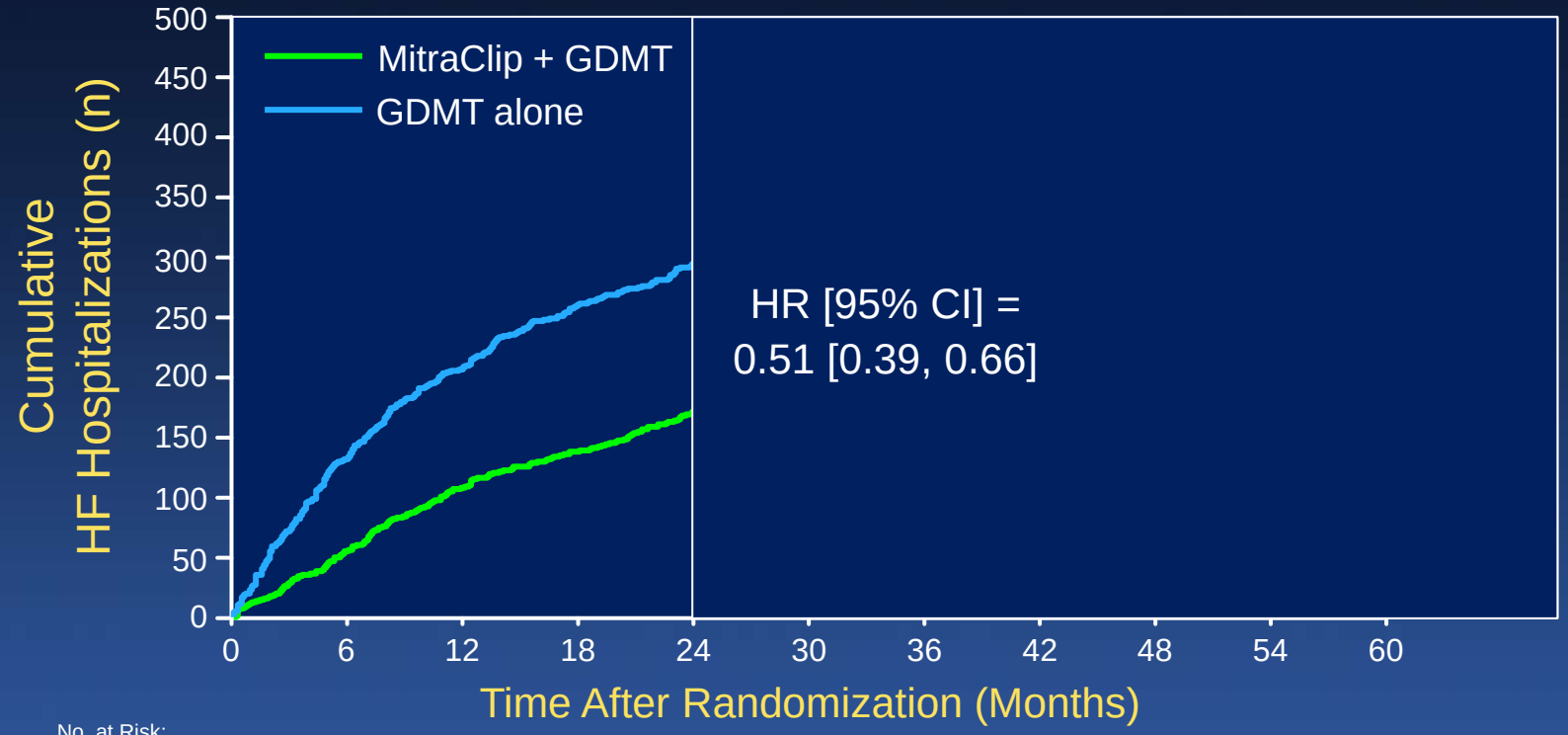
A parallel-controlled, open-label, multicenter trial in 614 patients with heart failure and moderate-to-severe (3+) or severe (4+) secondary MR who remained symptomatic despite maximally-tolerated GDMT



*Stratified by cardiomyopathy etiology (ischemic vs. non-ischemic) and site

Stone GW et al. N Engl J Med. 2018;379:2307-18; Stone GW et al. N Engl J Med. 2023;on-line

Primary Effectiveness: All Heart Failure Hospitalizations Through 5-Year Follow-up



No. at Risk:											
MitraClip	302	269	238	219	205	186	167	151	138	124	79
GDMT	312	272	224	188	156	133	120	106	94	84	59

Analyzed using a joint frailty model to account for correlated events and the competing risk of death

COAPT TRIAL

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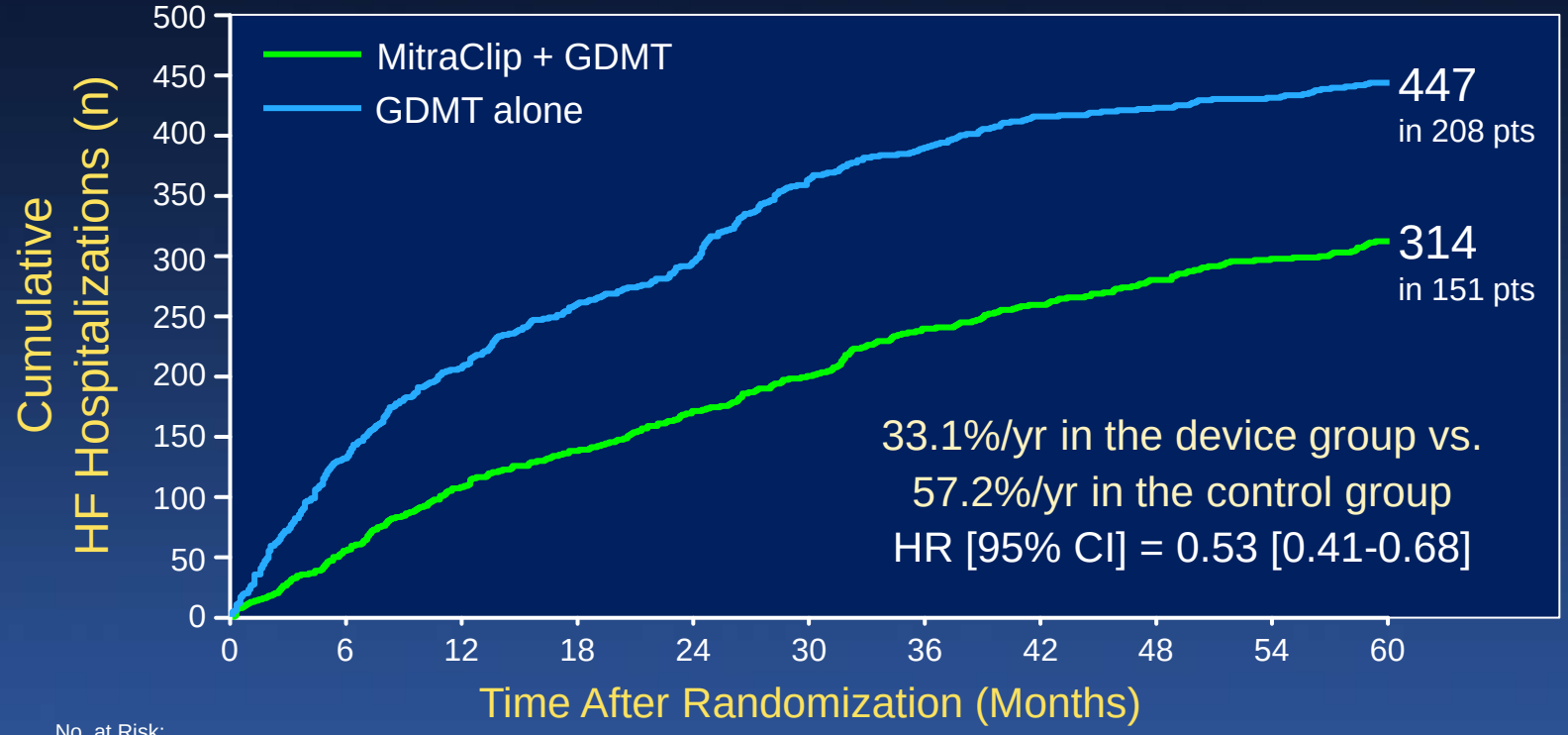

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Primary Safety: Outcomes Through 5 Years

MitraClip implant attempts (n=293)	30 Days	12 Months	24 Months	36 Months	48 Months	60 Months
All safety events	4 (1.4)	9 (3.3)	**Primary safety endpoint**			
Device-specific events	4 (1.4)	4 (1.4)				
- SLDA	2 (0.7)	2 (0.7)				
- Device embolization	1 (0.3)	1 (0.3)				
- Endocarditis requiring surgery	0 (0.0)	0 (0.0)				
- Mitral stenosis* requiring surgery	0 (0.0)	0 (0.0)				
- Any device-related complication requiring non-elective CV surgery	1 (0.3)	1 (0.3)				
Progressive HF unrelated to device complications	0 (0.0)	5 (2.0)				
- LVAD	0 (0.0)	3 (1.2)				
- Heart transplantation	0 (0.0)	2 (0.8)				

SLDA = single leaflet device attachment. LVAD = left ventricular assist device. *Mitral valve area <1.5 cm^2 by echo core laboratory measurement.

Primary Safety: Outcomes Through 5 Years

MitraClip implant attempts (n=293)	30 Days	12 Months	24 Months	36 Months	48 Months	60 Months
All safety events	4 (1.4)	9 (3.3)	13 (5.2)	20 (8.8)	22 (10.1)	23 (10.8)
Device-specific events	4 (1.4)	4 (1.4)	4 (1.4)	4 (1.4)	4 (1.4)	4 (1.4)
- SLDA	2 (0.7)	2 (0.7)	2 (0.7)	2 (0.7)	2 (0.7)	2 (0.7)
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- Any device-related complication requiring non-elective CV surgery	1 (0.3)	1 (0.3)	1 (0.3)	1 (0.3)	1 (0.3)	1 (0.3)
Progressive HF unrelated to device complications	0 (0.0)	5 (2.0)	9 (3.8)	16 (7.5)	18 (8.8)	19 (9.5)
- LVAD	0 (0.0)	3 (1.2)	6 (2.6)	11 (5.1)	12 (5.8)	13 (6.5)
- Heart transplantation	0 (0.0)	2 (0.8)	3 (1.3)	7 (3.4)	9 (4.7)	9 (4.7)

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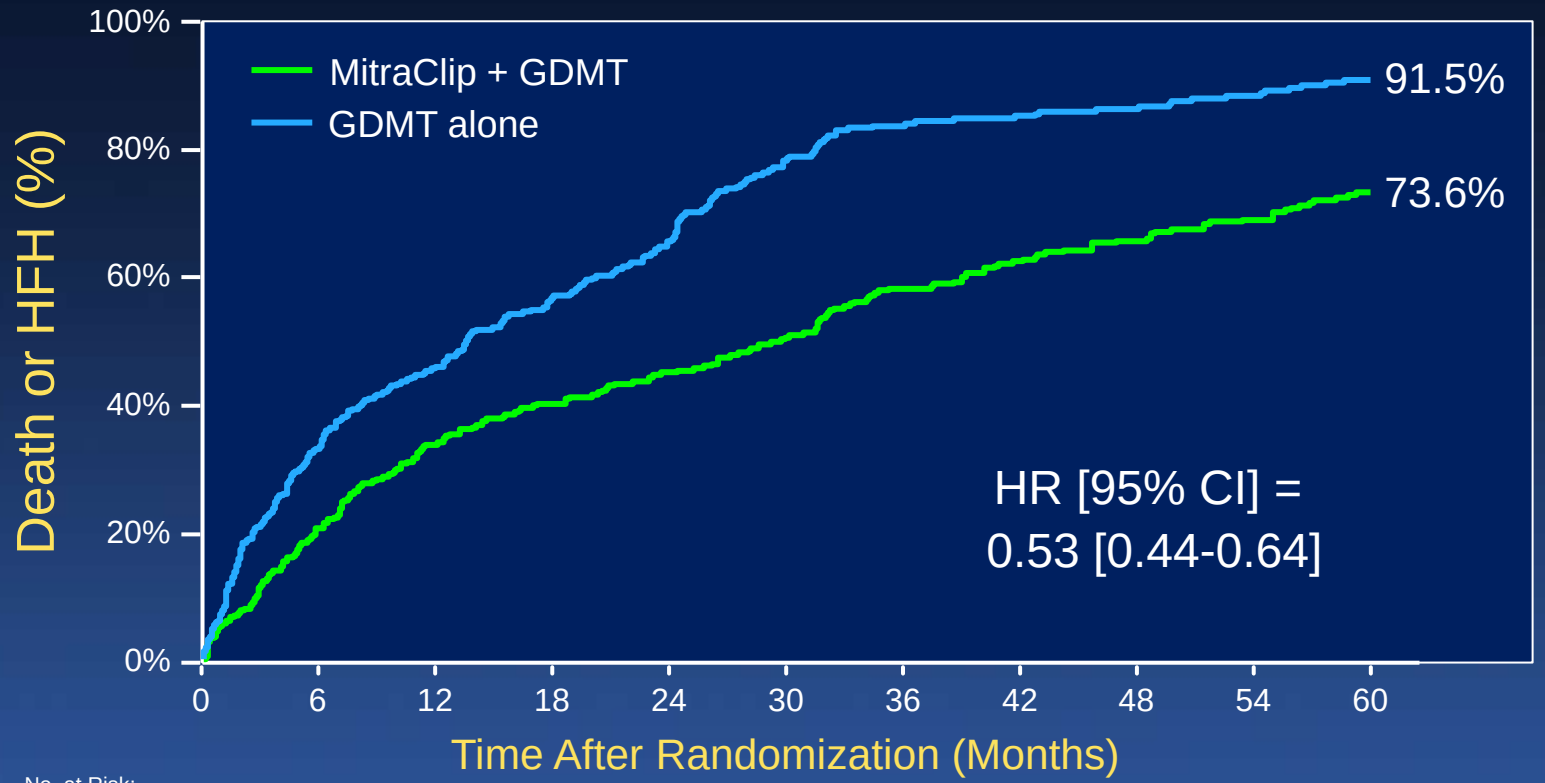
COAPT TRIAL

Death or HF Hospitalization



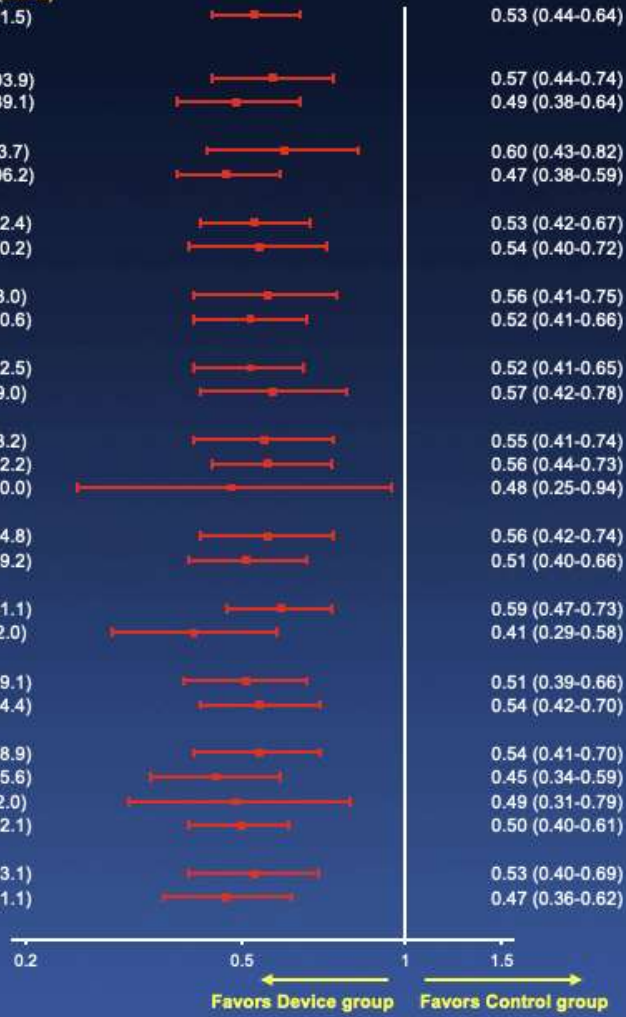
No. at Risk:

MitraClip	302	236	194	174	158	141	118	105	93	81	52
GDMT	312	206	157	122	95	58	43	37	33	26	17

COAPT TRIAL

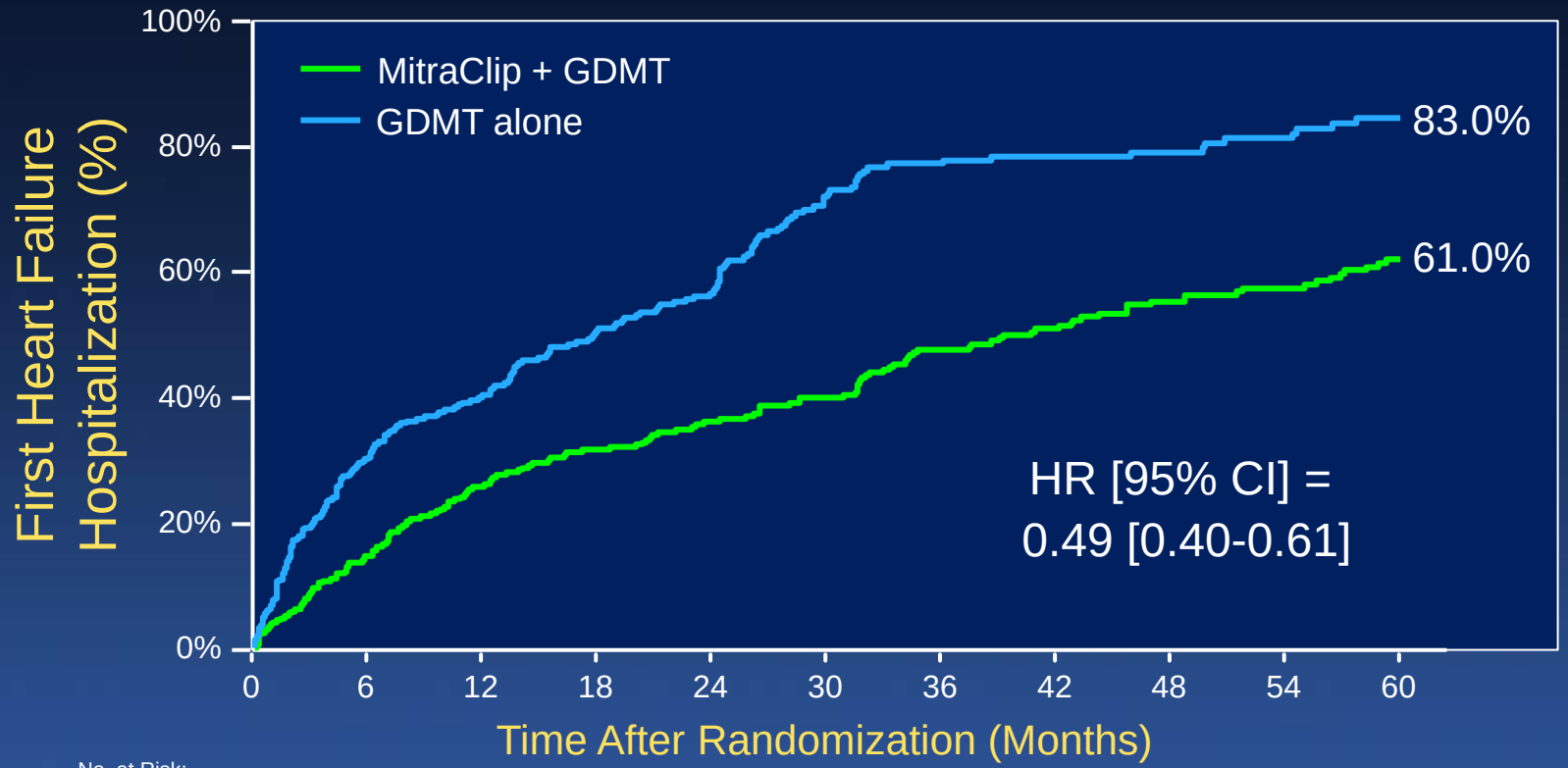
5-Year Death or HFH Subgroup analysis

Subgroup	Device group N in group	Device group Event n (KM%)	Control group N in group	Control group Event n (KM%)	HR (95% CI)	P [Int]
All patients (n=614)	302	213 (73.6)	312	266 (91.5)	0.53 (0.44-0.64)	
Age (median)						
≥74 years (n=317)	157	118 (78.1)	160	136 (93.9)	0.57 (0.44-0.74)	0.33
<74 years (n=297)	145	95 (68.6)	152	130 (89.1)	0.49 (0.38-0.64)	
Sex						
Female (n=221)	101	64 (66.6)	120	94 (83.7)	0.60 (0.43-0.82)	0.42
Male (n=393)	201	149 (77.0)	192	172 (96.2)	0.47 (0.38-0.59)	
Etiology of cardiomyopathy						
Ischemic (n=373)	184	135 (76.1)	189	159 (92.4)	0.53 (0.42-0.67)	0.99
Non-ischemic (n=241)	118	78 (69.6)	123	107 (90.2)	0.54 (0.40-0.72)	
Prior CRT						
Yes (n=224)	115	84 (74.9)	109	96 (93.0)	0.56 (0.41-0.75)	0.89
No (n=390)	187	129 (72.9)	203	170 (90.6)	0.52 (0.41-0.66)	
HF hospitalization in prior year						
Yes (n=407)	204	143 (73.7)	203	175 (92.5)	0.52 (0.41-0.65)	0.66
No (n=207)	98	70 (73.4)	109	91 (89.0)	0.57 (0.42-0.78)	
Baseline NYHA class						
I or II (n=240)	130	92 (72.8)	110	92 (88.2)	0.55 (0.41-0.74)	0.41
III (n=322)	154	108 (74.5)	168	143 (92.2)	0.56 (0.44-0.73)	
IV (n=51)	18	13 (72.2)	33	30 (100.0)	0.48 (0.25-0.94)	
STS replacement score						
≥8% (n=262)	126	96 (80.7)	136	115 (94.8)	0.56 (0.42-0.74)	0.69
<8% (n=352)	176	117 (68.7)	176	151 (89.2)	0.51 (0.40-0.66)	
Surgical risk status						
High (n=423)	205	154 (79.3)	218	183 (91.1)	0.59 (0.47-0.73)	0.12
Not high (n=188)	94	56 (60.8)	94	83 (92.0)	0.41 (0.29-0.58)	
Baseline MR grade						
3+ (n=320)	148	97 (69.0)	172	143 (89.1)	0.51 (0.39-0.66)	0.82
4+ (n=293)	154	116 (78.0)	139	122 (94.4)	0.54 (0.42-0.70)	
Baseline LVEF						
≥30% (median: n=301)	150	102 (70.8)	151	125 (88.9)	0.54 (0.41-0.70)	0.38
<30% (median: n=274)	131	94 (75.3)	143	128 (95.6)	0.45 (0.34-0.59)	
>40% (n=103)	50	34 (72.0)	53	42 (92.0)	0.49 (0.31-0.79)	0.85
≤40% (n=472)	231	162 (73.0)	241	211 (92.1)	0.50 (0.40-0.61)	
Baseline LVEDV (median)						
≥181 mL (n=288)	141	102 (75.6)	147	130 (93.1)	0.53 (0.40-0.69)	0.51
<181 mL (n=287)	140	94 (69.9)	147	123 (91.1)	0.47 (0.36-0.62)	



COAPT TRIAL

First Heart Failure Hospitalization



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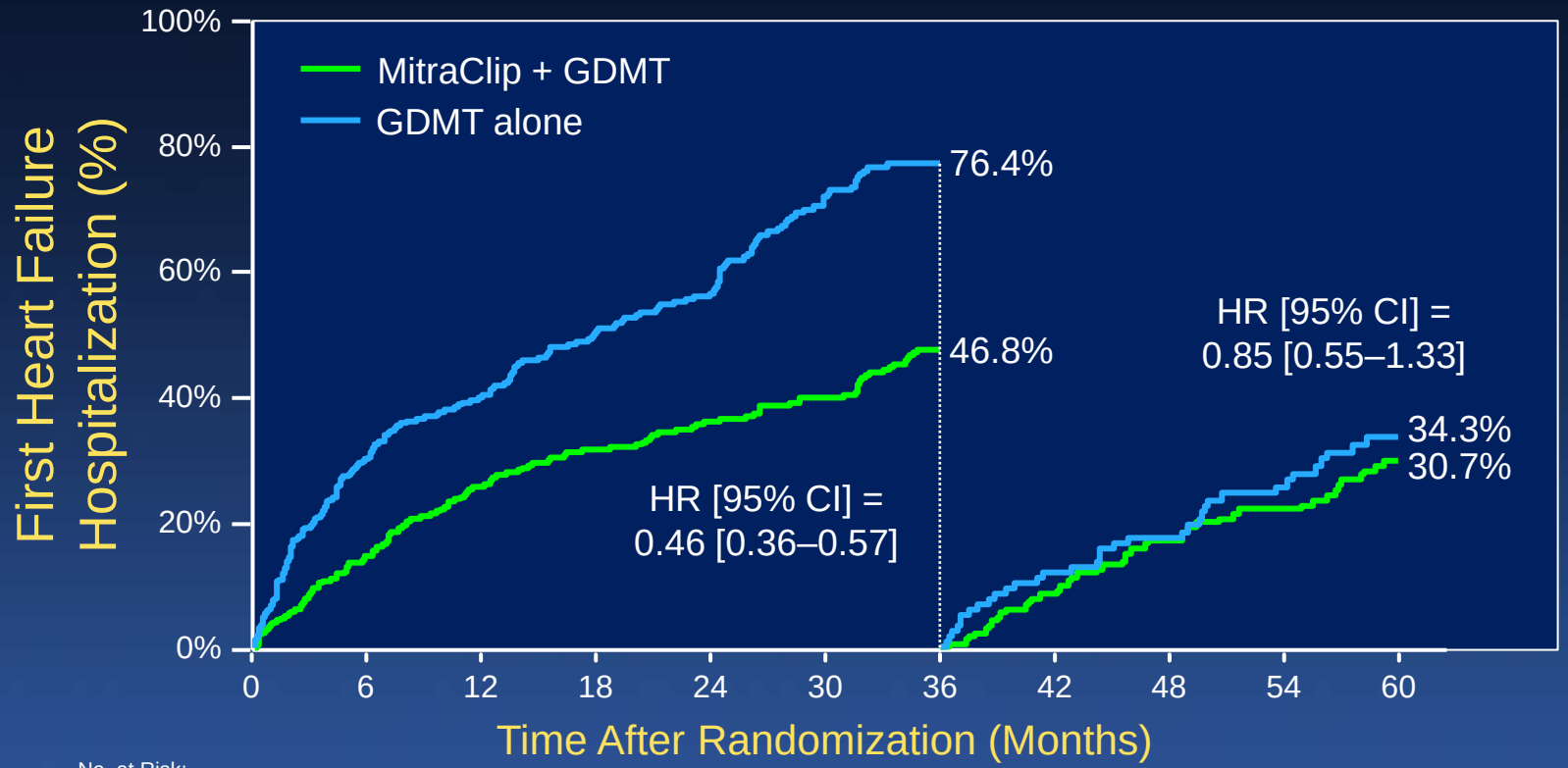
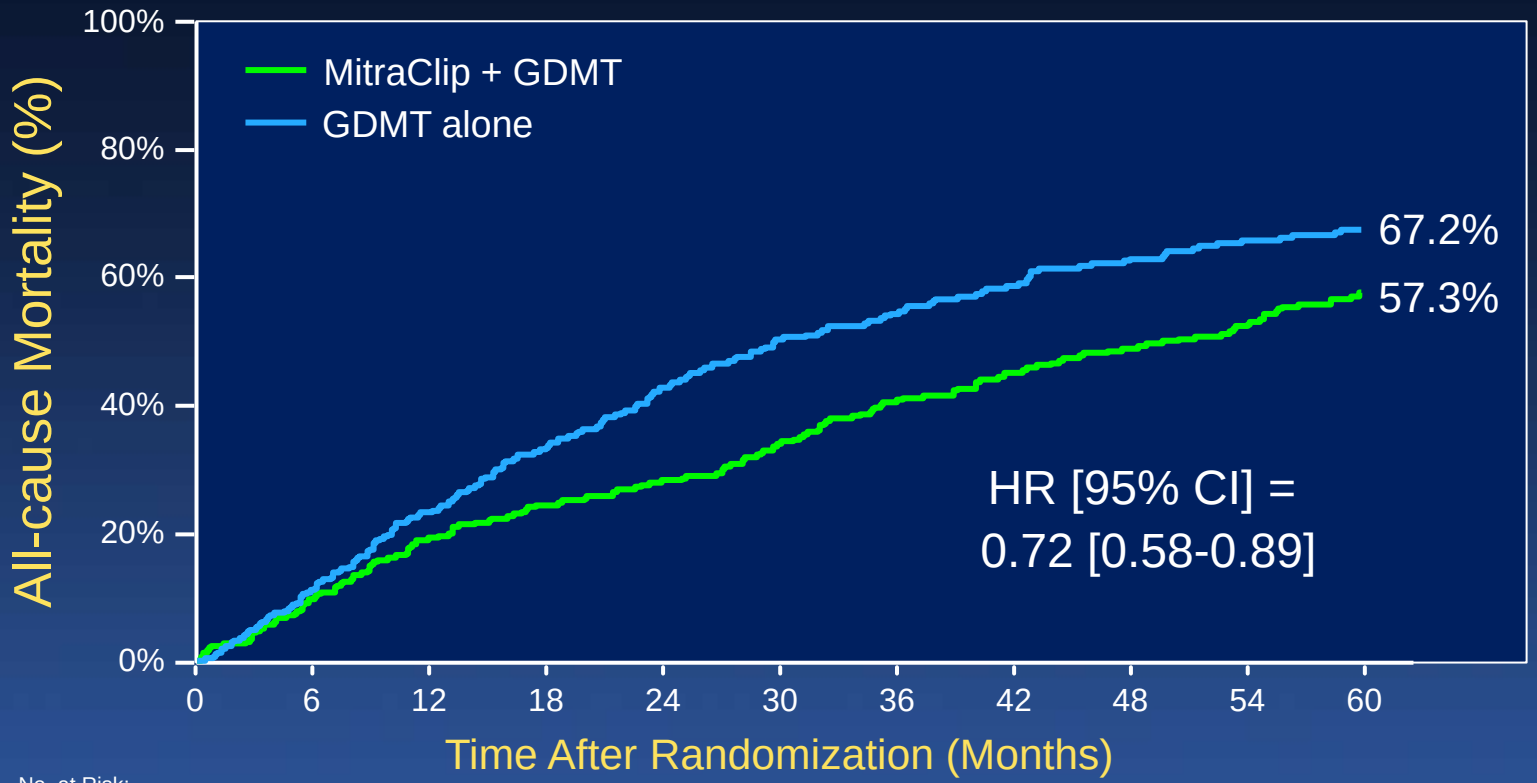


No. at Risk:

MitraClip	302	194	158	167	119	63
GDMT	312	157	95	119	82	43

COAPT TRIAL

All-cause Mortality



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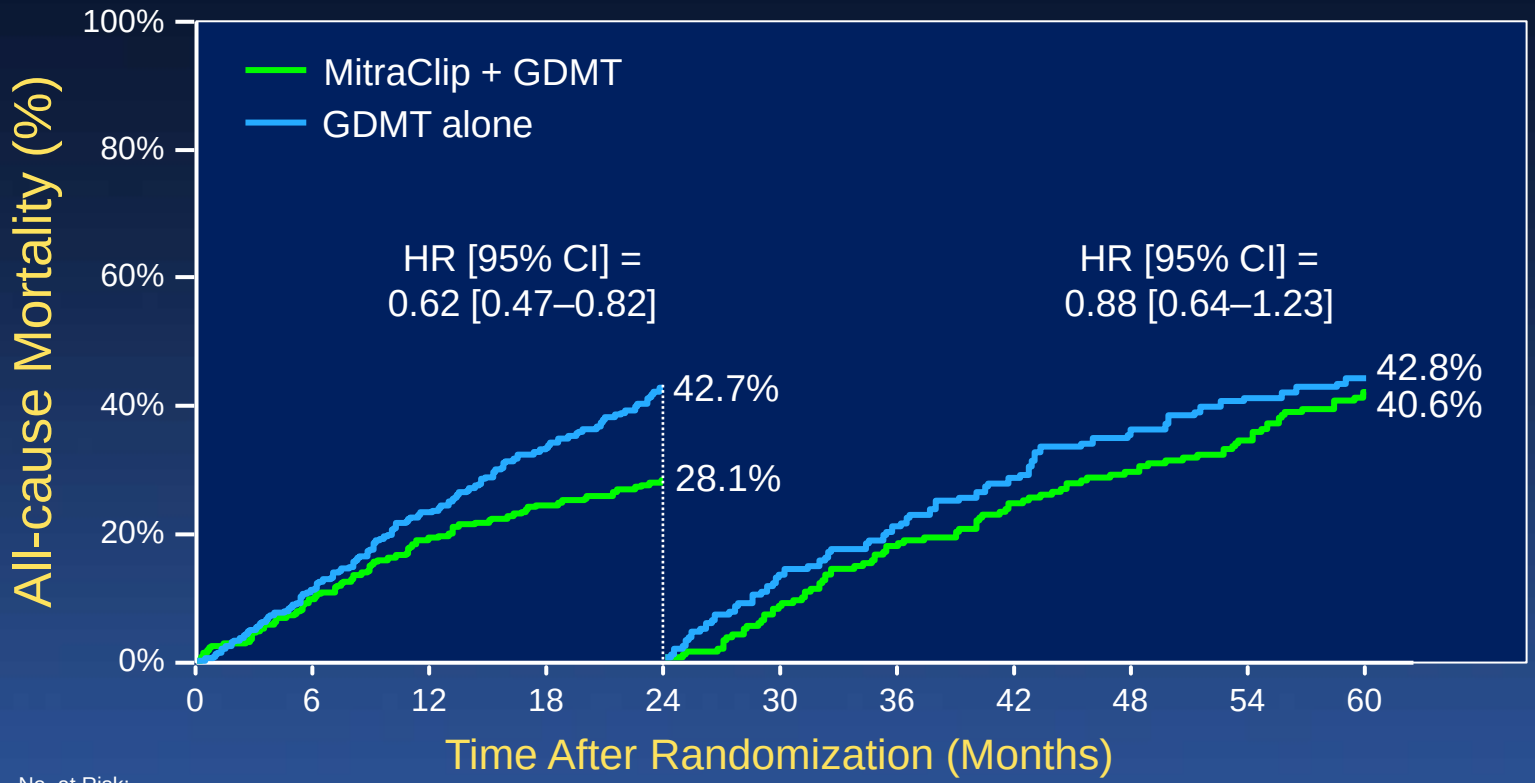

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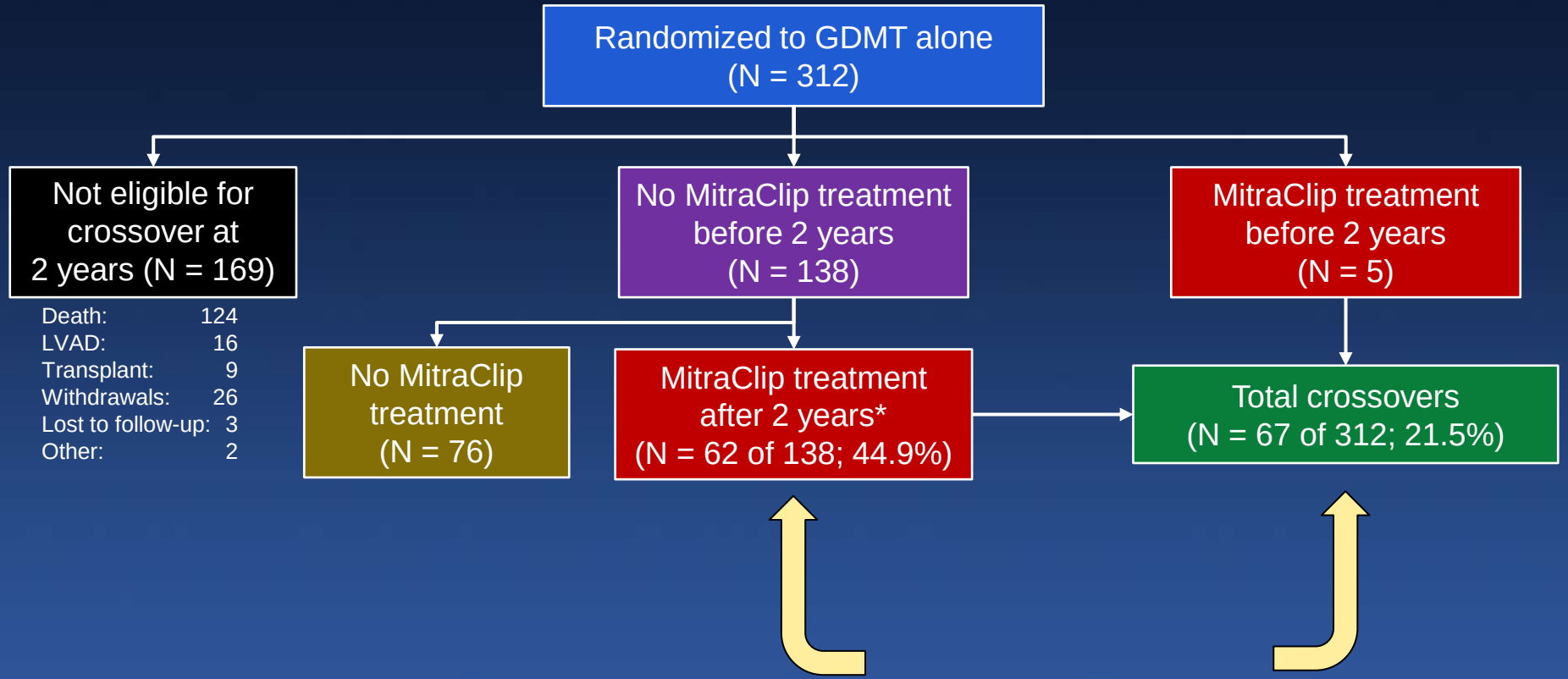
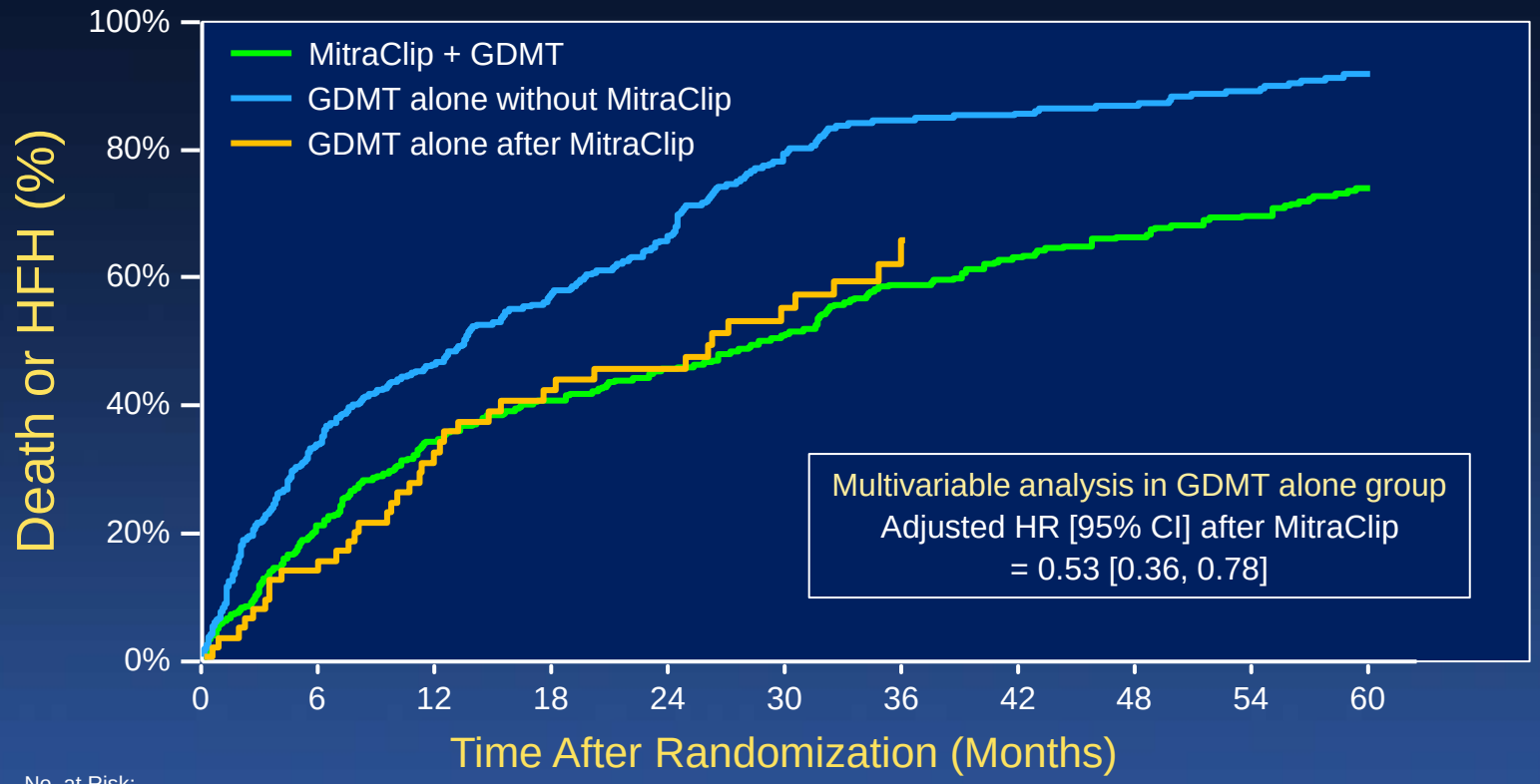
COAPT TRIAL

Crossover Treatment in the Control Arm



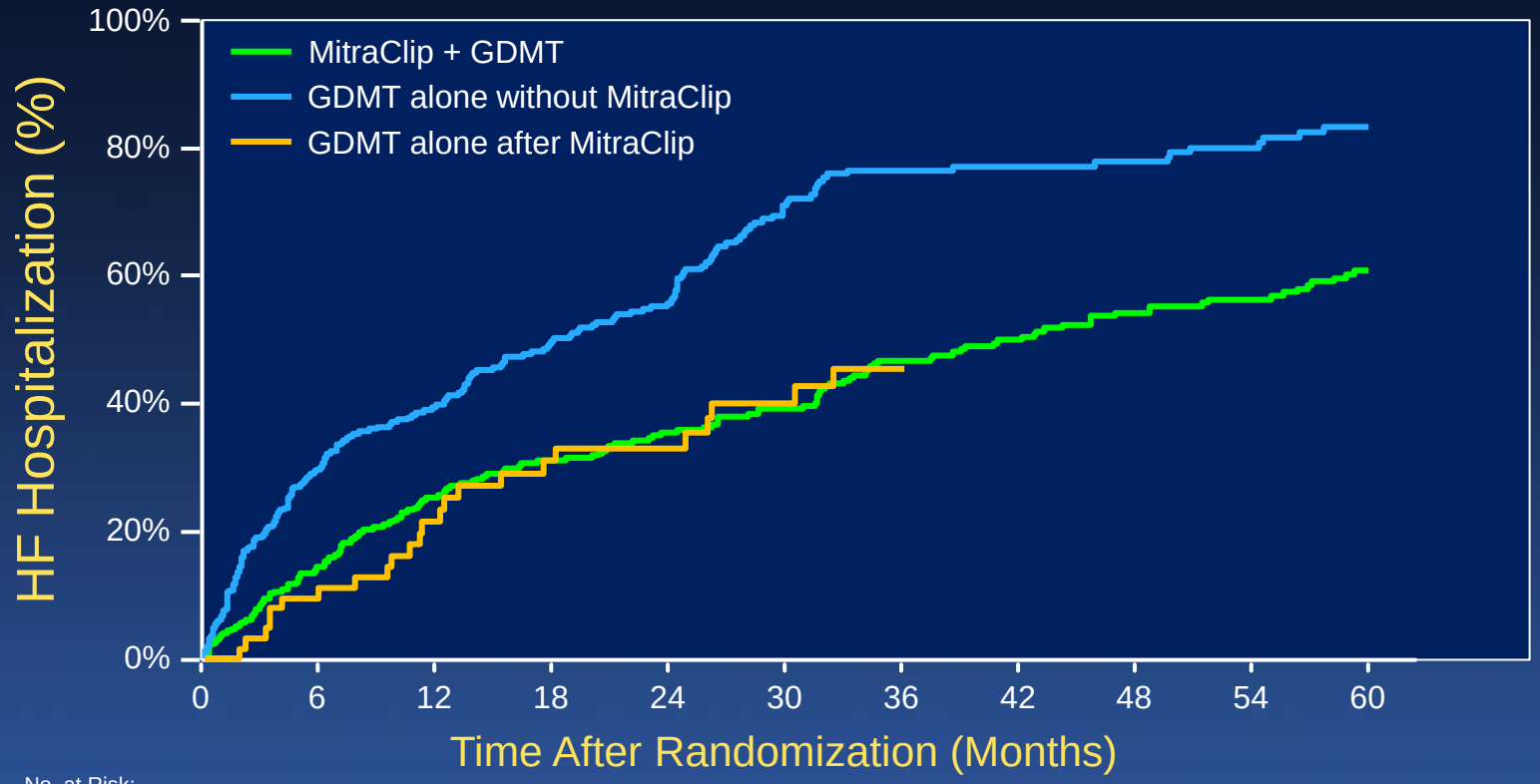
Death or HFH After Crossovers



No. at Risk:							
MitraClip	302	236	194	158	118	93	52
GDMT without MitraClip	312	205	156	93	40	32	16
GDMT after MitraClip	67	56	42	30	9	-	-

For crossover patients, follow-up duration is from the crossover procedure date

HF Hospitalizations After Crossovers



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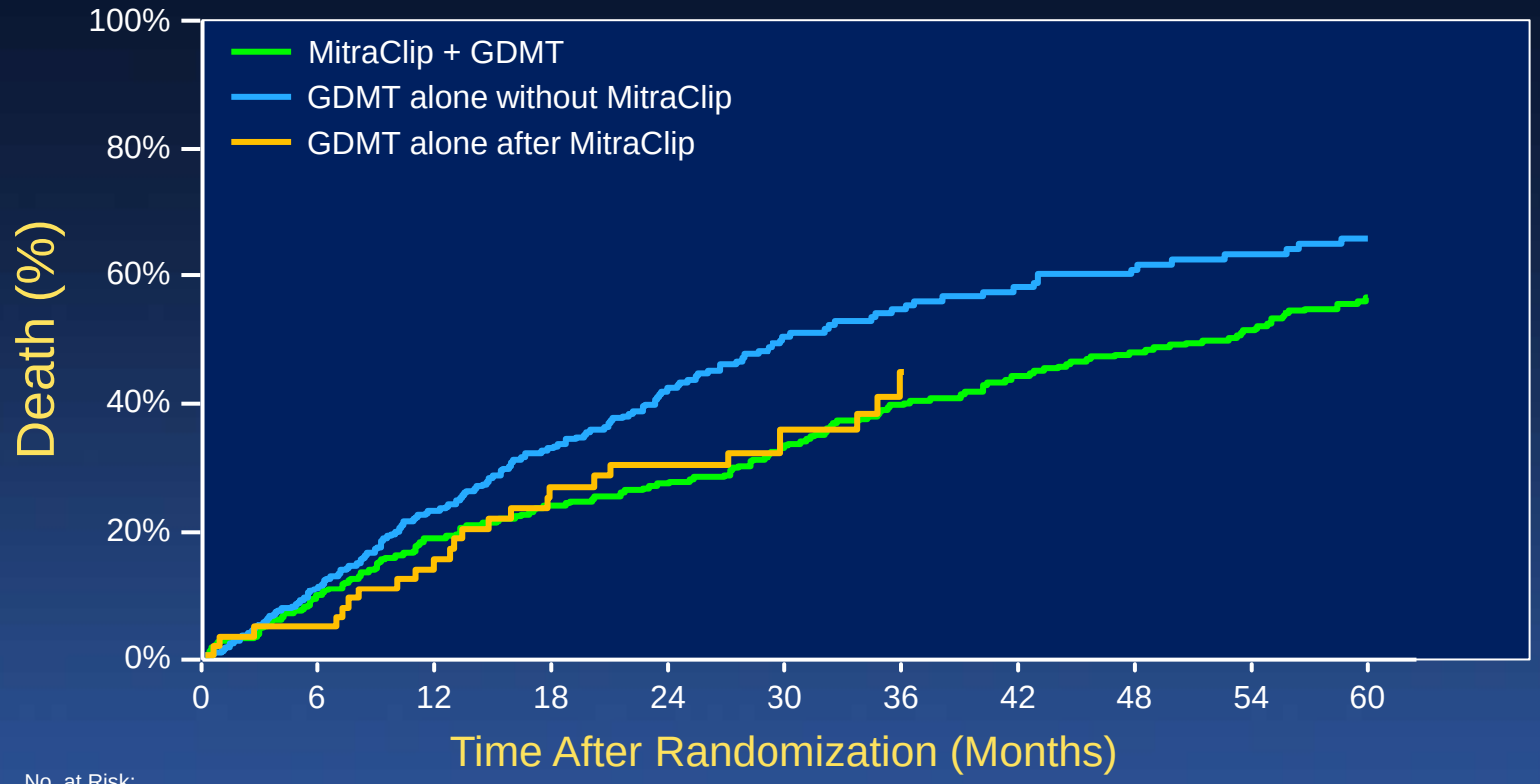
All-Cause Mortality After Crossovers



No. at Risk:							
MitraClip	302	269	238	205	167	138	79
GDMT without MitraClip	312	271	223	145	69	52	28
GDMT after MitraClip	67	62	52	39	13	-	-

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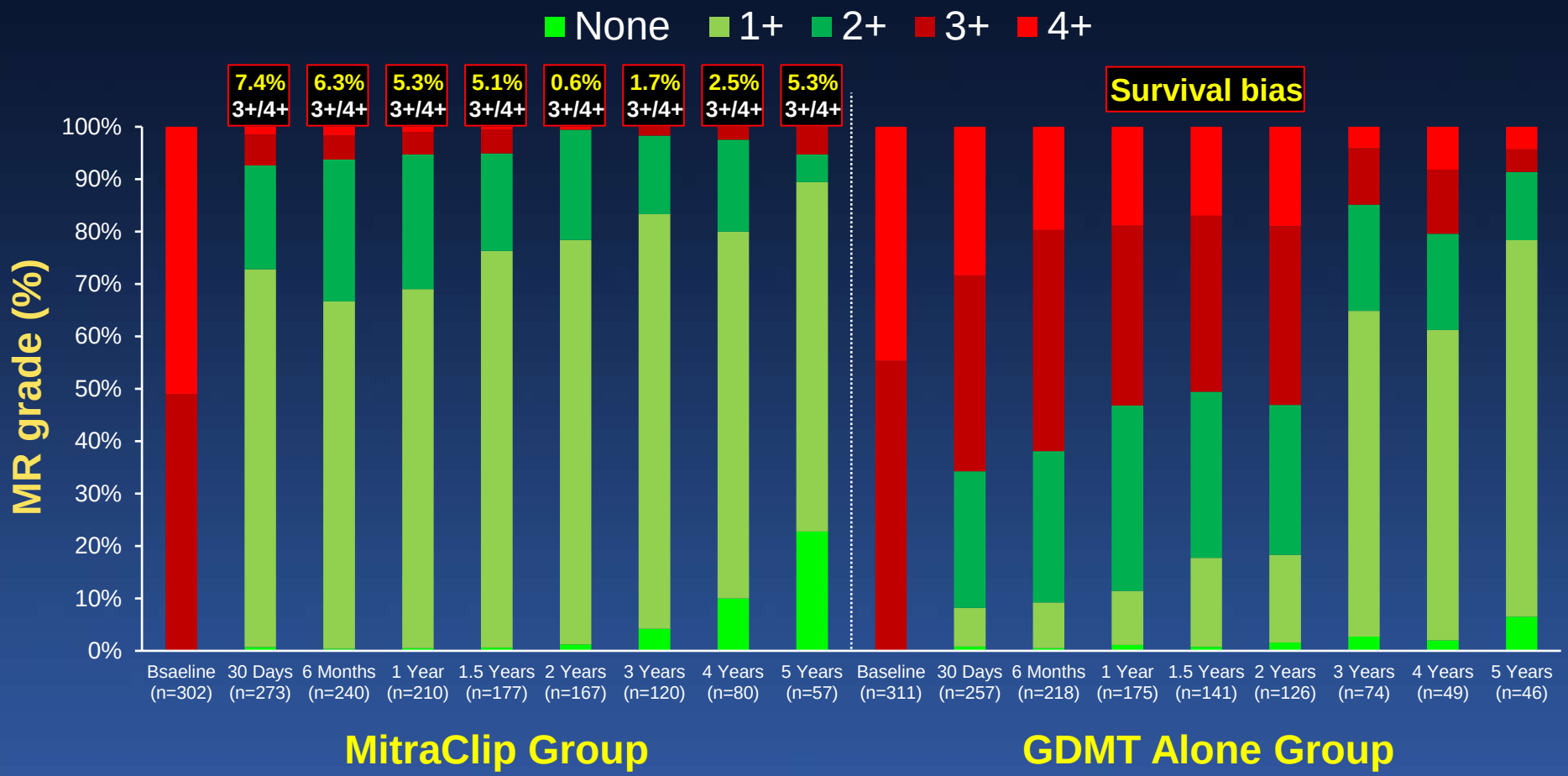
COAPT TRIAL

MR Severity (Core Lab)



Conclusions and Implications (1)

- In pts with heart failure and severe secondary MR who remained symptomatic despite optimal medical therapy, TEER with the MitraClip was safe, reduced the rate of HFHs and improved survival during 5-year follow-up.
- These outcomes were consistent across all pre-specified subgroups, regardless of patient age, sex, MR severity, left ventricular function and volume, cardiomyopathy etiology, and surgical risk.
- Symptomatic status (NYHA class) was also improved throughout 5-year follow-up, and MitraClip treatment provided durable repair of mitral regurgitation.

Conclusions and Implications (2)

- Treatment effects were reduced after 2-3 years, in large part due to MitraClip treatment in 44.9% of control group pts surviving to 2 years.
- The prognosis of control group pts so treated was substantially improved, similar to that of pts originally assigned to MitraClip treatment.
- However, nearly half of control group pts had died before becoming eligible for crossover at 2 years.
- Heart failure patients appropriate for TEER with the MitraClip should therefore be identified and considered for treatment as early as possible.

Conclusions and Implications (3)

- Finally, despite the favorable risk:benefit profile of the MitraClip in this setting, adverse outcomes continued to accrue in both groups such that 91.5% of control group pts and 73.6% of device group pts had either died or been hospitalized for heart failure within 5 years.
- These findings emphasize the need for further therapies to address the underlying left ventricular dysfunction in this high-risk population.