ABSORB Meta-analysis, ABSORB IV and Future Expectations

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Disclosures

Chairman of the global ABSORB clinical trial program, uncompensated

4 Absorb RCTs, 3389 pts at 301 centers

The AV Absorb BVS program (n=3389)	ABSORB II	ABSORB Japan	ABSORB China	ABSORB III
ClinicalTrials.gov	NCT01425281	NCT01844284	NCT01923740	NCT01751906
N centers	46	38	24	193
N randomized pts	501	400	480	2,008
- assigned to BVS	335	266	241	1,322
- assigned to CoCr-EES	166	134	239	686
N study lesions	1 or 2	1 or 2	1 or 2	1 or 2
N study vessels*	1 or 2	1 or 2	1 or 2	1 or 2

*Maximum 1 lesion per vessel

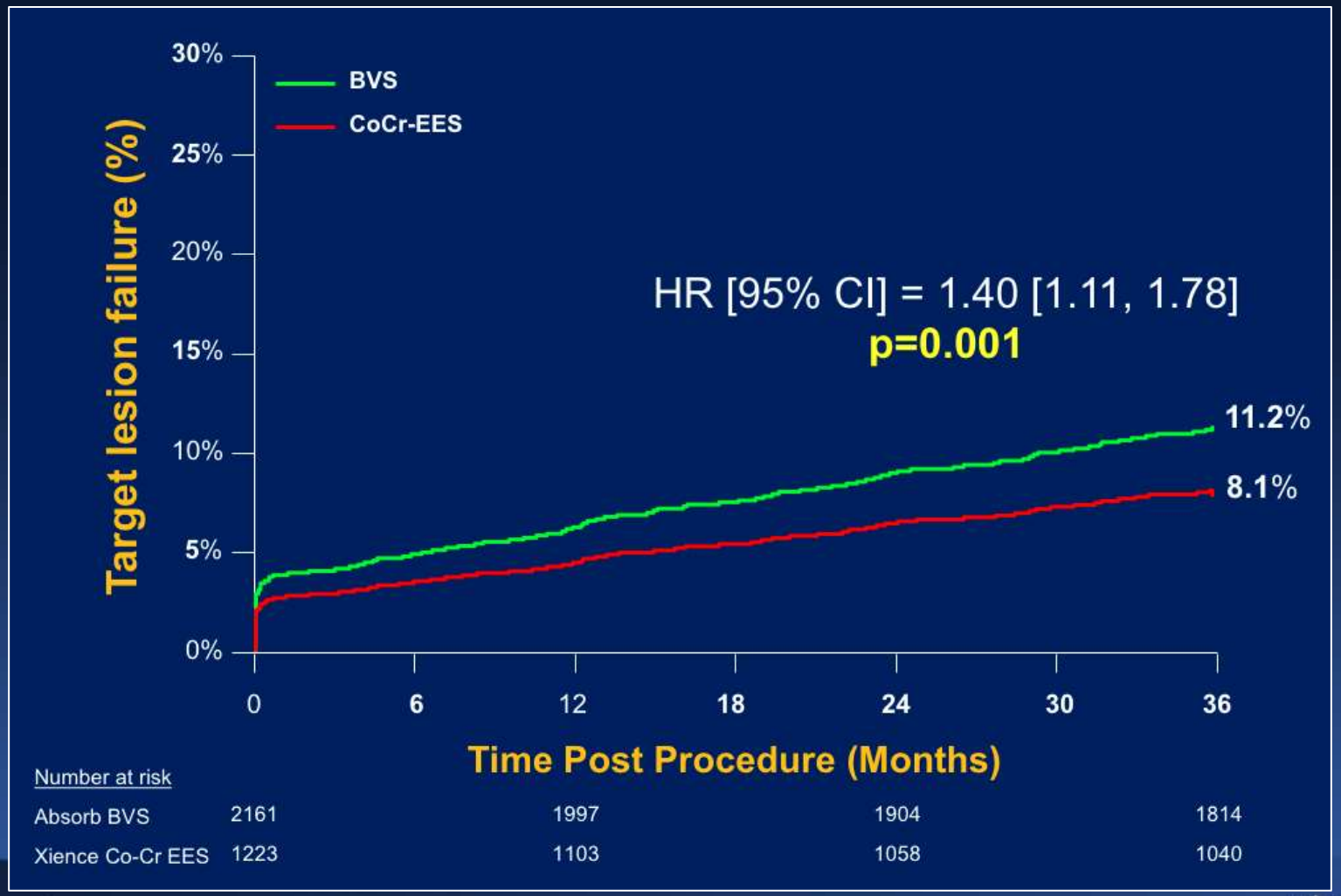
4 Absorb RCTs, 3389 pts at 301 centers

The AV Absorb BVS program (n=3389)	ABSORB II	ABSORB Japan	ABSORB China	ABSORB III
Target lesion RVD (mm)	Max LD 2.25 to 3.8 by QCA	≥2.5 to ≤3.75	≥2.5 to ≤3.75	≥2.5 to ≤3.75
Target lesion length (mm)	≤48	≤24	≤24	≤24
Device overlap allowed	Yes	Bailout only	Bailout only	Bailout only
2-year clinical follow-up	487 (97.2%)	391 (98.0%)	462 (96.3%)	1,990 (98.2%)
Routine angiographic FU	At 3 years	At 1, 2 and 3 years	At 1 year	No
Primary endpoint	Angio vasomotion at 3 years	TLF at 1 year	Angio in-segment late loss at 1 year	TLF at 1 year
Total follow-up	5 years	5 years	5 years	5 years

ABSORB: 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

3-Year TLF

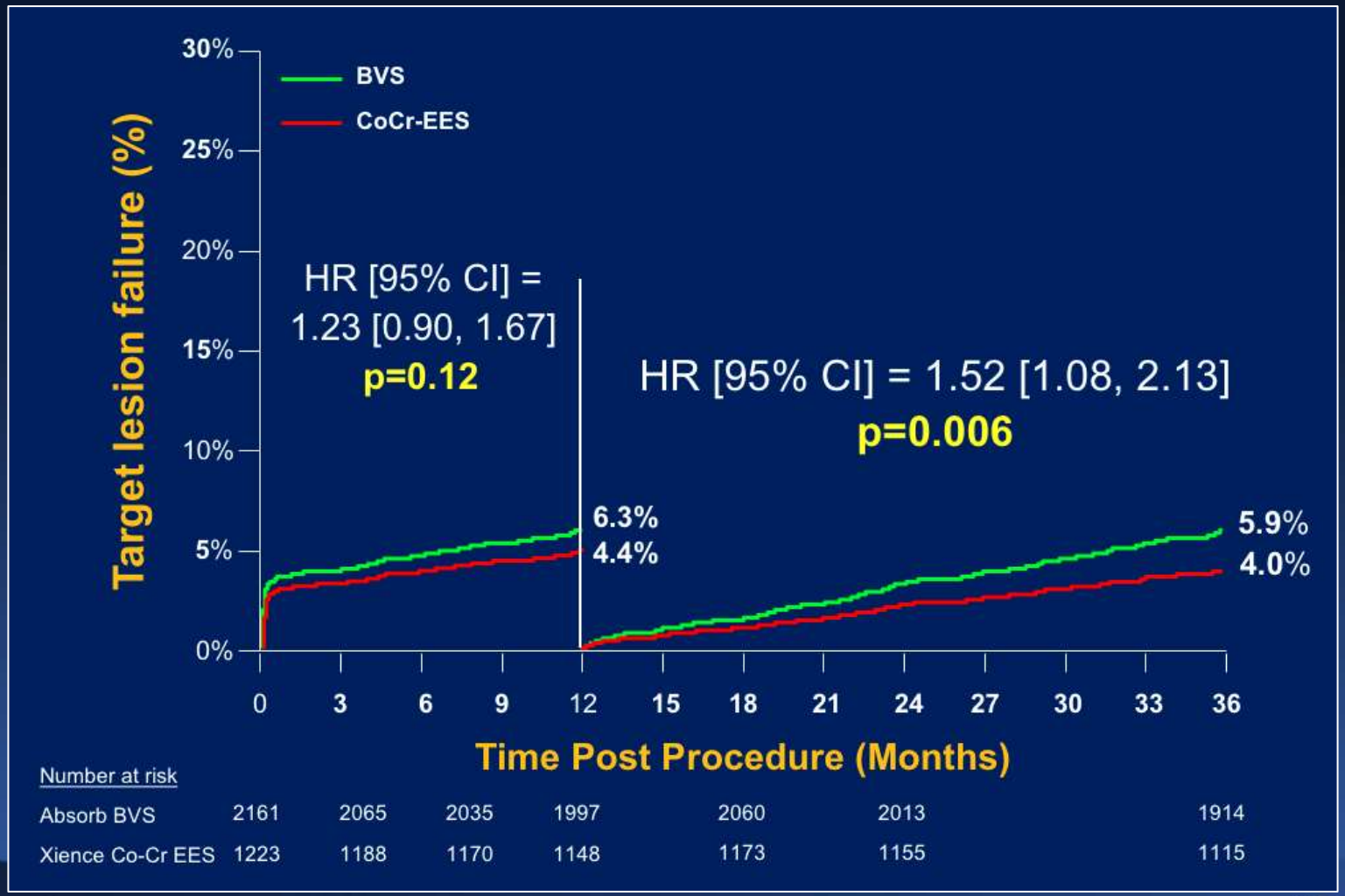


Ali Z et al. Circulation 2017;on-line

ABSORB: 1- 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

TLF landmark analysis



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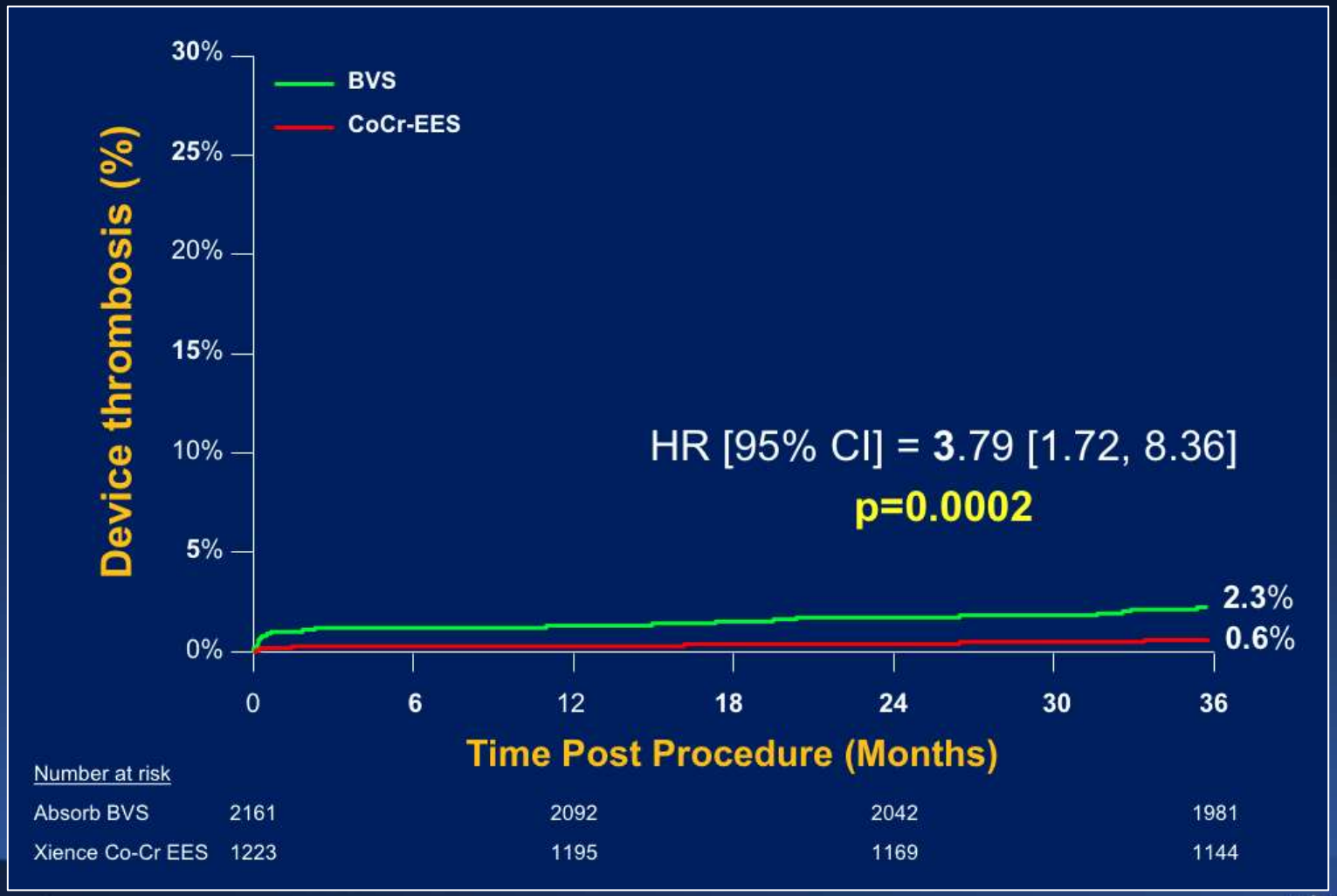
ABSORB: 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

3-Year Device Thrombosis



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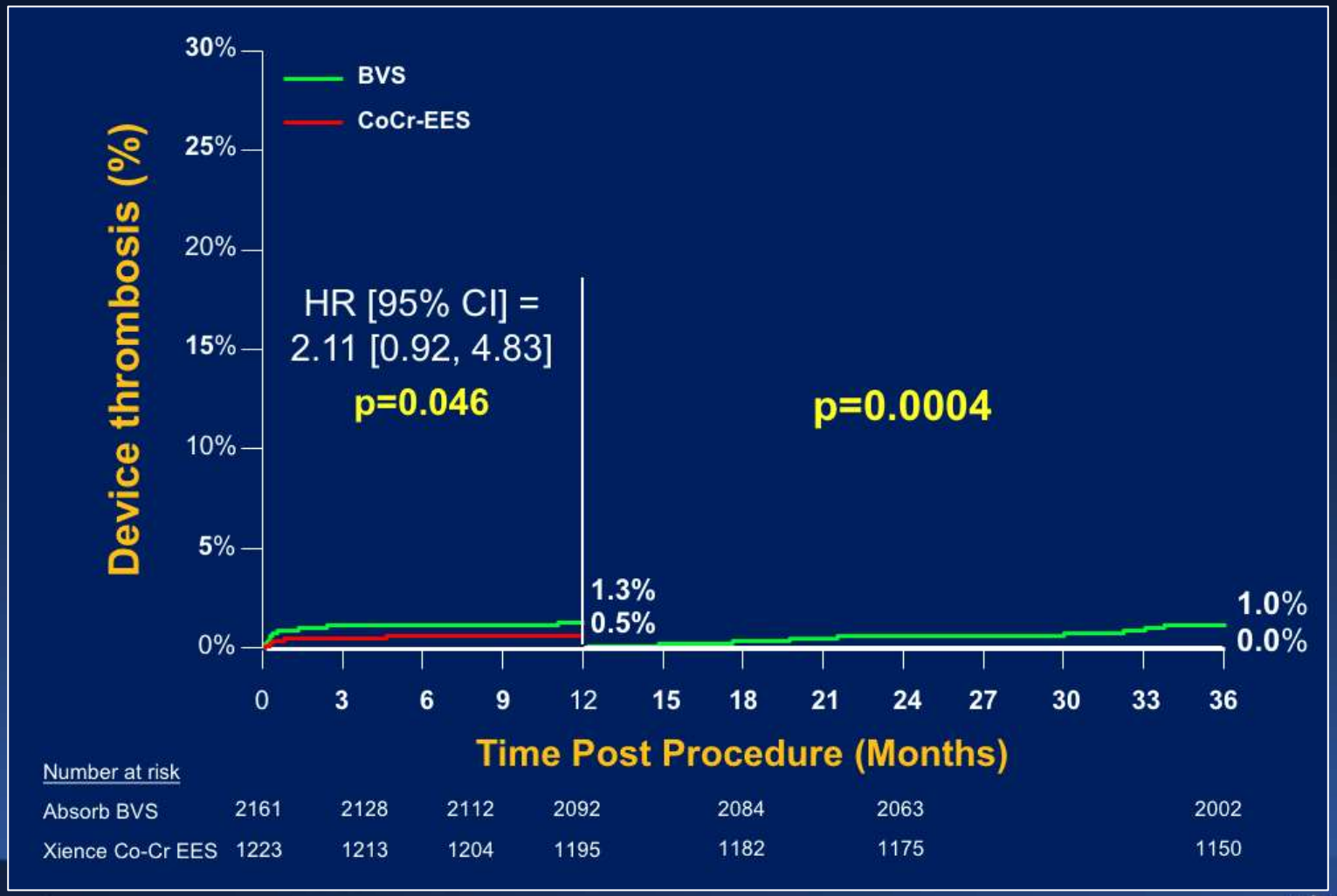
ABSORB: 1- 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

Device thrombosis landmark analysis



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ABSORB: 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

TLF with and without 57 pts with device thrombosis*

	3-year TLF				3-year TLF excluding ST/ScT*			
	BVS	EES	RR [95% CI]	P	BVS	EES	RR [95% CI]	P
0-3 years	11.7%	8.1%	1.38 [1.10, 1.73]	0.006				
- Cardiac death	1.1%	1.1%	0.93 [0.47, 1.88]	0.85				
- TV-MI	7.8%	4.2%	1.72 [1.26, 2.35]	0.0006				
- ID-TLR	6.6%	4.4%	1.44 [1.05, 1.98]	0.02				
0-1 year	6.2%	4.9%	1.22 [0.90, 1.65]	0.20				
- Cardiac death	0.3%	0.3%	1.10 [0.28, 4.36]	0.89				
- TV-MI	5.1%	3.4%	1.40 [0.98, 1.98]	0.06				
- ID-TLR	2.4%	1.9%	1.24 [0.76, 2.02]	0.40				
1-3 years	6.1%	3.9%	1.50 [1.07, 2.08]	0.02				
- Cardiac death	0.7%	0.8%	0.88 [0.39, 1.98]	0.75				
- TV-MI	2.7%	1.0%	2.40 [1.29, 4.44]	0.006				
- ID-TLR	4.5%	2.6%	1.65 [1.10, 2.47]	0.01				

*50 in the BVS arm and 7 in the EES arm

ABSORB: 3-year Outcomes

Meta-analysis of 4 BVS vs. EES RCTs (n=3,389 pts)

TLF with and without 57 pts with device thrombosis*

	3-year TLF				3-year TLF excluding ST/ScT*			
	BVS	EES	RR [95% CI]	P	BVS	EES	RR [95% CI]	P
0-3 years	11.7%	8.1%	1.38 [1.10, 1.73]	0.006	9.7%	7.6%	1.22 [0.96, 1.56]	0.10
- Cardiac death	1.1%	1.1%	0.93 [0.47, 1.88]	0.85	1.0%	1.1%	0.85 [0.42, 1.73]	0.66
- TV-MI	7.8%	4.2%	1.72 [1.26, 2.35]	0.0006	5.7%	3.7%	1.43 [1.01, 2.01]	0.04
- ID-TLR	6.6%	4.4%	1.44 [1.05, 1.98]	0.02	4.6%	3.9%	1.15 [0.81, 1.62]	0.44
0-1 year	6.2%	4.9%	1.22 [0.90, 1.65]	0.20	4.9%	4.3%	1.11 [0.80, 1.54]	0.54
- Cardiac death	0.3%	0.3%	1.10 [0.28, 4.36]	0.89	0.2%	0.3%	0.79 [0.18, 3.45]	0.75
- TV-MI	5.1%	3.4%	1.40 [0.98, 1.98]	0.06	4.0%	2.9%	1.29 [0.88, 1.90]	0.20
- ID-TLR	2.4%	1.9%	1.24 [0.76, 2.02]	0.40	1.3%	1.4%	0.93 [0.51, 1.70]	0.81
1-3 years	6.1%	3.9%	1.50 [1.07, 2.08]	0.02	5.2%	3.9%	1.27 [0.91, 1.78]	0.16
- Cardiac death	0.7%	0.8%	0.88 [0.39, 1.98]	0.75	0.7%	0.8%	0.88 [0.39, 1.98]	0.75
- TV-MI	2.7%	1.0%	2.40 [1.29, 4.44]	0.006	1.6%	1.0%	1.44 [0.75, 2.76]	0.28
- ID-TLR	4.5%	2.6%	1.65 [1.10, 2.47]	0.01	3.5%	2.6%	1.30 [0.86, 1.97]	0.22

*50 in the BVS arm and 7 in the EES arm

ABSORB IV: Trial Design

NCT01751906

Compared to ABSORB III:
Troponin pos ACS, thrombus and 3 lesions included

2,604 pts with SIHD or ACS
1 - 3 target lesions w/RVD
2.5-3.75 mm and LL ≤24 mm

Randomize 1:1
Stratified by diabetes and ABSORB III-like vs. not

ABSORB BVS
N=1,296

Xience EES
N=1,308

BVS technique:
Pre-dil: 1:1; NC balloon recommended
Sizing: IV TNG; QCA/IVUS/OCT strongly recommended if visually estimated RVD ≤2.75 mm and 2.5 mm device intended; <2.5 mm ineligible!
Post-dil: 1:1, NC balloon, ≥16 atm strongly recommended

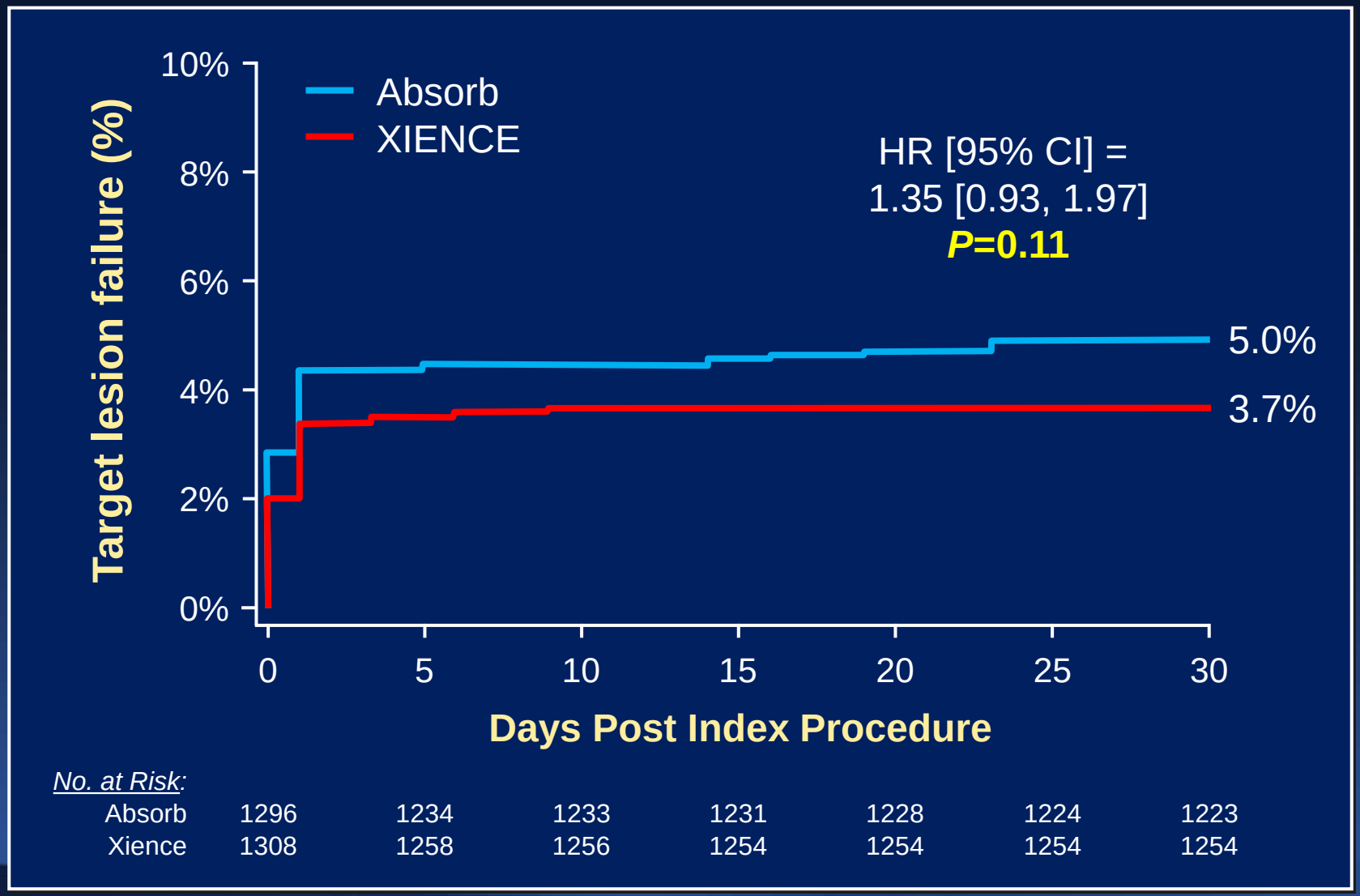
DAPT for ≥12 months
Clinical/angina follow-up: 1, 3, 6, 9, 12 months, yearly through 7-10 years
SAQ-7 and EQ-5D: 1, 6, 12 months and 3 and 5 years
Cost-effectiveness: 1, 2, and 3 years

Primary endpoints: TLF at 30 days; TLF between 3 and 7-10 yrs (pooled with AIII)
Secondary endpoints: TLF at 1 year; angina at 1 year

No routine angiographic follow-up

ABSORB IV

ABSORB IV 30-day
Target Lesion Failure



No. at Risk:

Absorb	1296	1234	1233	1231	1228	1224	1223
Xience	1308	1258	1256	1254	1254	1254	1254

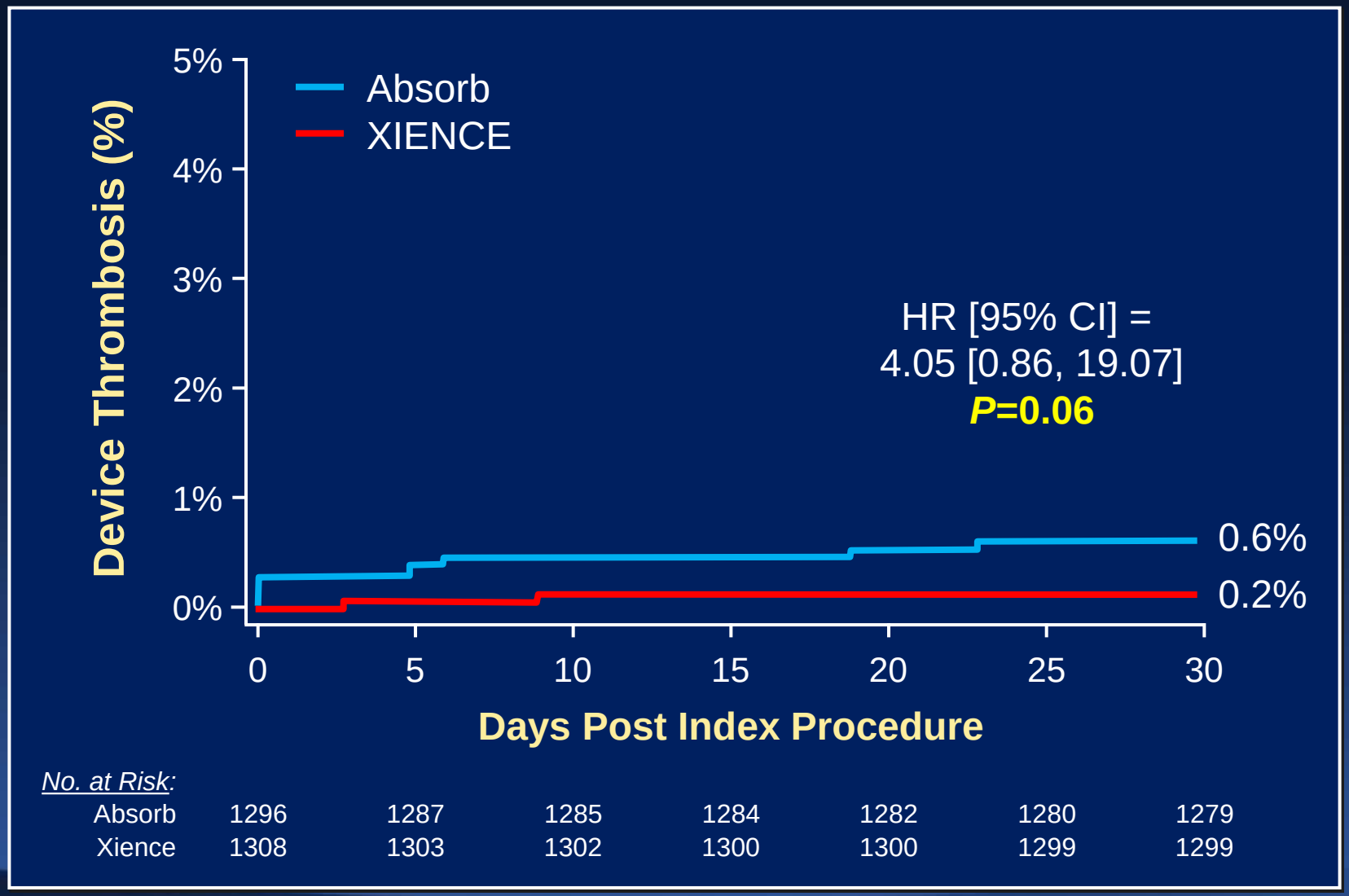
Cardiovascular Research Foundation

Columbia University Medical Center
NewYork-Presbyterian

ABSORB IV

ABSORB IV 30-day

Device Thrombosis



ABSORB III vs. ABSORB IV

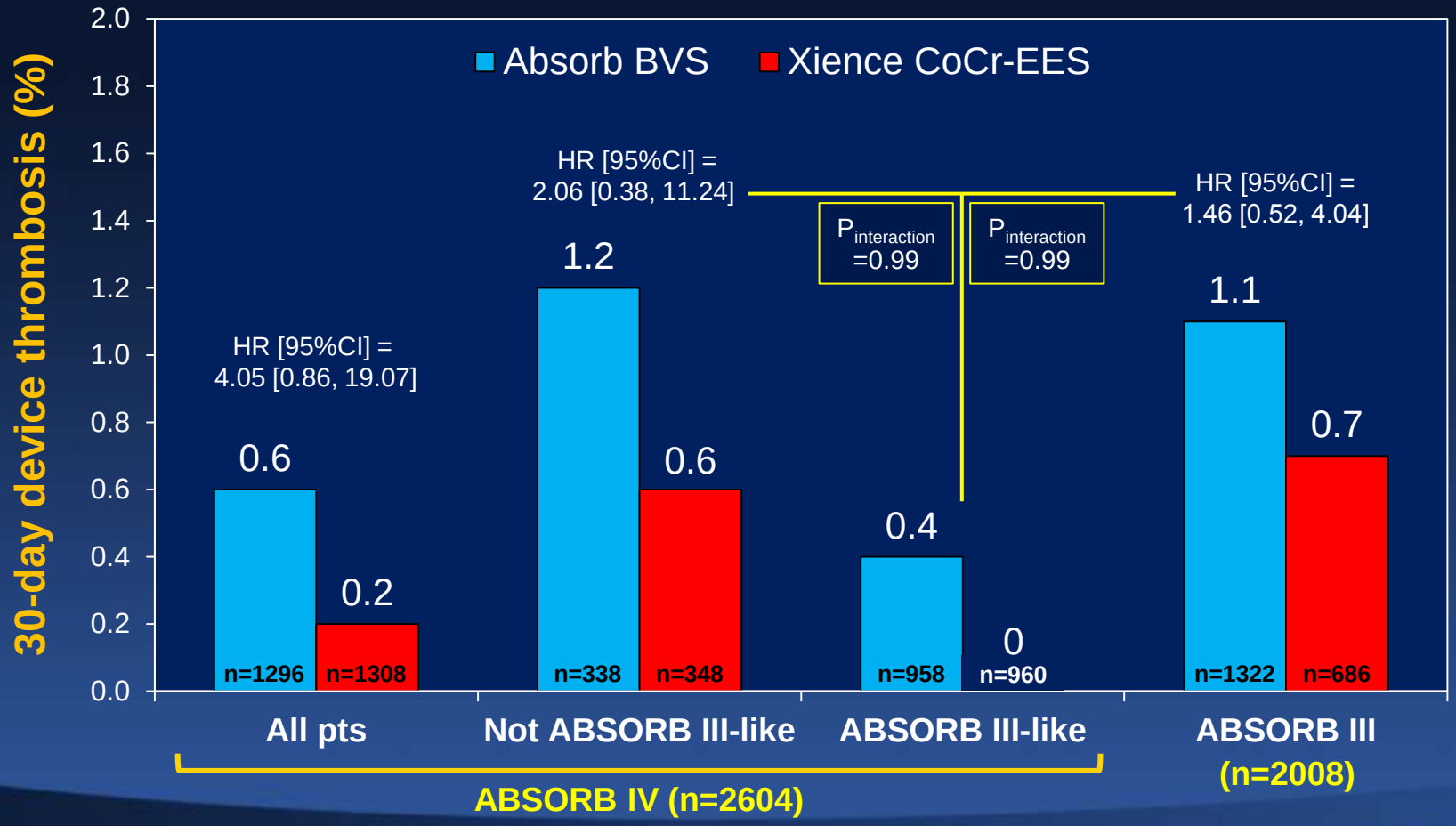
	ABSORB III			ABSORB IV		
	All pts (N=2008) (L=2098)	Absorb (N=1322) (L=1385)	Xience (N=686) (L=713)	All pts (N=2604) (L=2903)	Absorb (N=1296) (L=1446)	Xience (N=1308) (L=1457)
ABSORB III-like	100%	100%	100%	73.7%	73.9%	73.4%
Not ABSORB III-like	0%	0%	0%	26.3%	26.1%	26.6%
- troponin+ ACS	0%	0%	0%	20.8%	20.4%	21.1%
- 3 target lesions	0%	0%	0%	0.5%	0.6%	0.4%
- thrombotic lesion	0%	0%	0%	2.1%	1.9%	2.3%
[1]QCA RVD mean, mm	2.66	2.67	2.65	2.89	2.90	2.89
[1]QCA RVD <2.25 mm	18.3%	17.8%	19.4%	2.7%	2.5%	2.9%
[1]Pre-dil mean b/a ratio	1.09	1.09	1.08	1.00	1.00	0.99
[1]Pre-dil mean, atm.	12.1	12.1	12.1	12.6	12.6	12.6
[1]Post-dil performed	59.8%	64.8%	49.9%	68.3%	82.6%	54.1%
[1]Post-dil mean, atm.	15.6	15.6	15.8	16.2	16.0	16.4

N= number of patients
[1] L= number of lesions

Device Thrombosis

ABSORB IV vs. ABSORB III

1918/2604 pts (73.7%) enrolled in ABSORB IV were “ABSORB III-like”; 686 were not (20.8% troponin+ ACS, 0.5% 3 lesions treated, 2.1% thrombus)

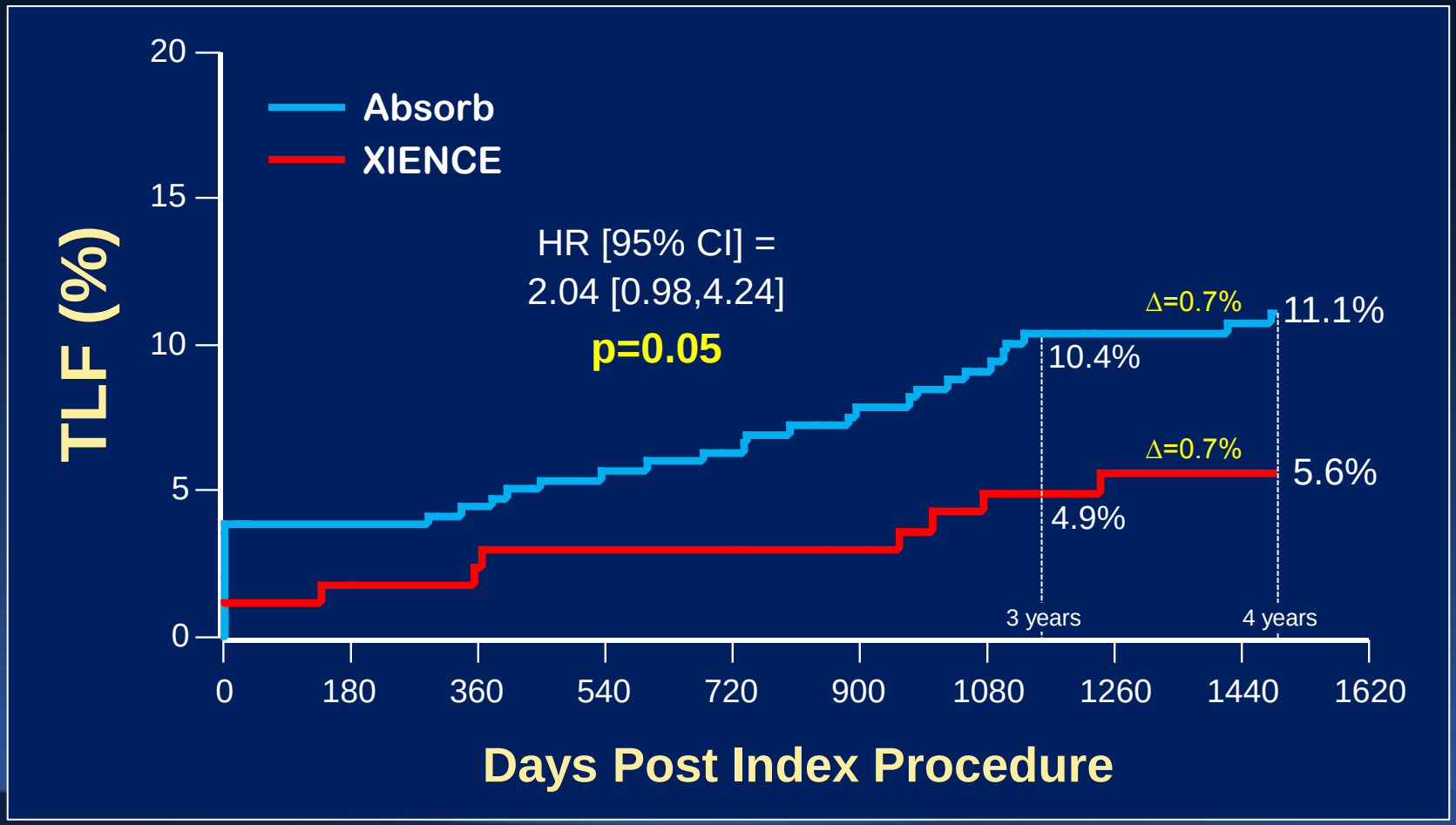


ABSORB II 4-year

Target Lesion Failure

501 pts randomized 2:1 BVS vs. EES

Routine angio FU at 3 yrs; 428 (85%) 4-year FU (re-consent required)

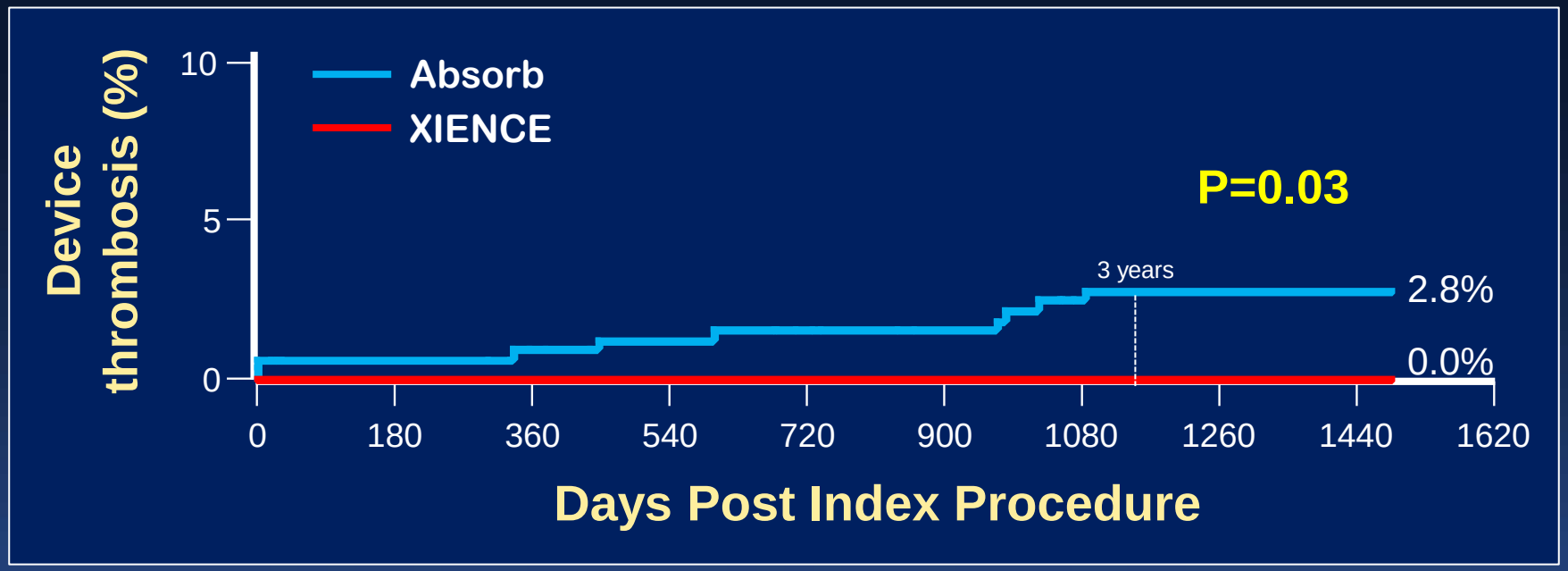


ABSORB II 4-year

Device Thrombosis (def/prob)

501 pts randomized 2:1 BVS vs. EES

Routine angio FU at 3 yrs; 428 (85%) 4-year FU (re-consent required)

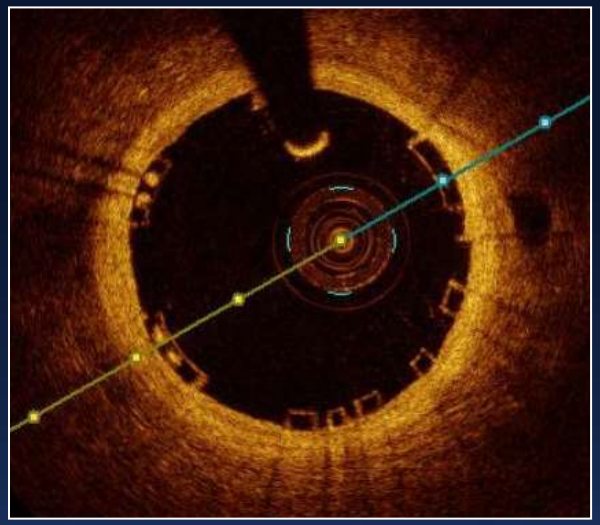


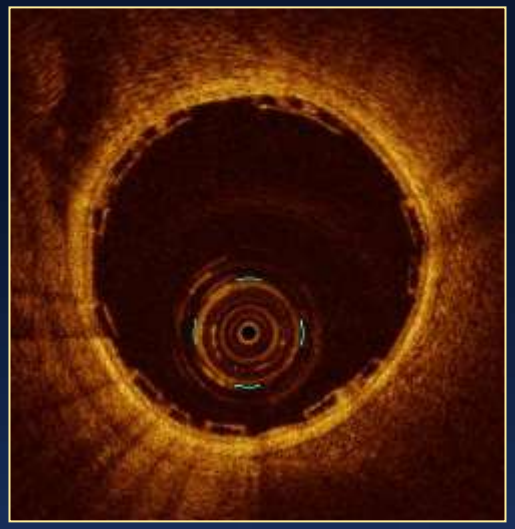
No device thromboses after 3 years

(in either arm)

Next Generation Absorb
"Falcon"

Absorb GT1
157 *u*m
strut
thickness





Falcon
<100 *u*m
strut
thickness

New Insights from the ABSORB RCTs: Conclusions

- In the ABSORB II, Japan, China and III trials, the 1st gen Absorb BVS resulted in 3-year higher rates of TLF than Xience, mostly driven by increased scaffold thrombosis
- In the ABSORB IV trial, better technique (avoiding very small vessels) reduced early scaffold (and stent) thrombosis
- In the ABSORB II trial, event rates with BVS vs. CoCr-EES were similar between 3 and 4 years, and no further scaffold thromboses occurred beyond 3 years, the time point of complete PLLA polymer bioresorption
- A new generation Absorb scaffold has been developed with thinner struts, which in concert with optimized implantation technique offers promise of superior outcomes