ACC.07
56th Annual Scientific Session
March 24 – 27, 2007 New Orleans

i2 summit 2007
INNOVATION IN INTERVENTION
American College of Cardiology in co-sponsorship with SCAI

i2 2007 :

Late Breaking Clinical Trials

Ted Feldman, M.D., FSCAI, FACC

Angioplasty Summit

April 25-27th 2007

Seoul, Korea

Angioplasty Summit TCT Asia Pacific 2007
Wednesday, April 25 ~ Friday, April 27, 2007

CVRF

Ted Feldman MD, FACC, FSCAI

Disclosure Information

The following relationships exist:

Grant support: Abbott, Atritech, BSC, Cardiac Dimensions, Cordis, Evalve, St Jude
Consultant: BSC, Cardiac Dimensions, Cordis, Edwards, Myocor
Speaker: Boston Scientific

Off label use of products and investigational devices will be discussed in this presentation

Our findings reinforce existing clinical practice guidelines, which state that PCI can be safely deferred in patients with stable coronary artery disease, even in those with extensive, multivessel involvement and inducible ischemia, provided that intensive, multifaceted medical therapy is instituted and maintained.[1,2] As an initial management approach, optimal medical therapy without routine PCI can be implemented safely in the majority of patients with stable coronary artery disease. However, approximately one third of these patients may subsequently require revascularization

Gibbons RJ. Abrams J. Chatterjee K. Daley J. et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina--summary article: a report of the ACC/AHA Task Force on practice guidelines (Committee on the Management of Patients With Chronic Stable Angina). Journal of the American College of Cardiology. 41(1):159-68, 2003

Smith SC Jr. Feldman TE. Hirshfeld JW Jr. et al. ACC/AHA/SCAI 2005 guideline update for percutaneous coronary intervention: ACC/AHA/SCAI Writing Committee to Update 2001 Guidelines for Percutaneous Coronary Intervention. Circulation. 113(7):e166-286, 2006

THE NATION'S NEWSPAPER
USA TODAY
NO. 1 IN THE USA

March 27, 2007

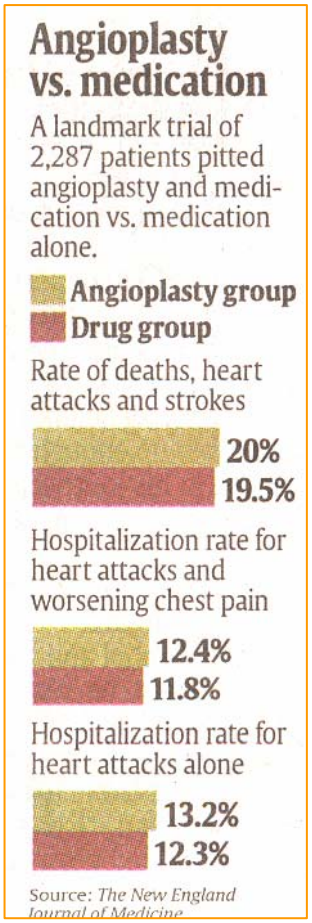
Medicine enough for pain in chest?

Study sees way to avoid angioplasty

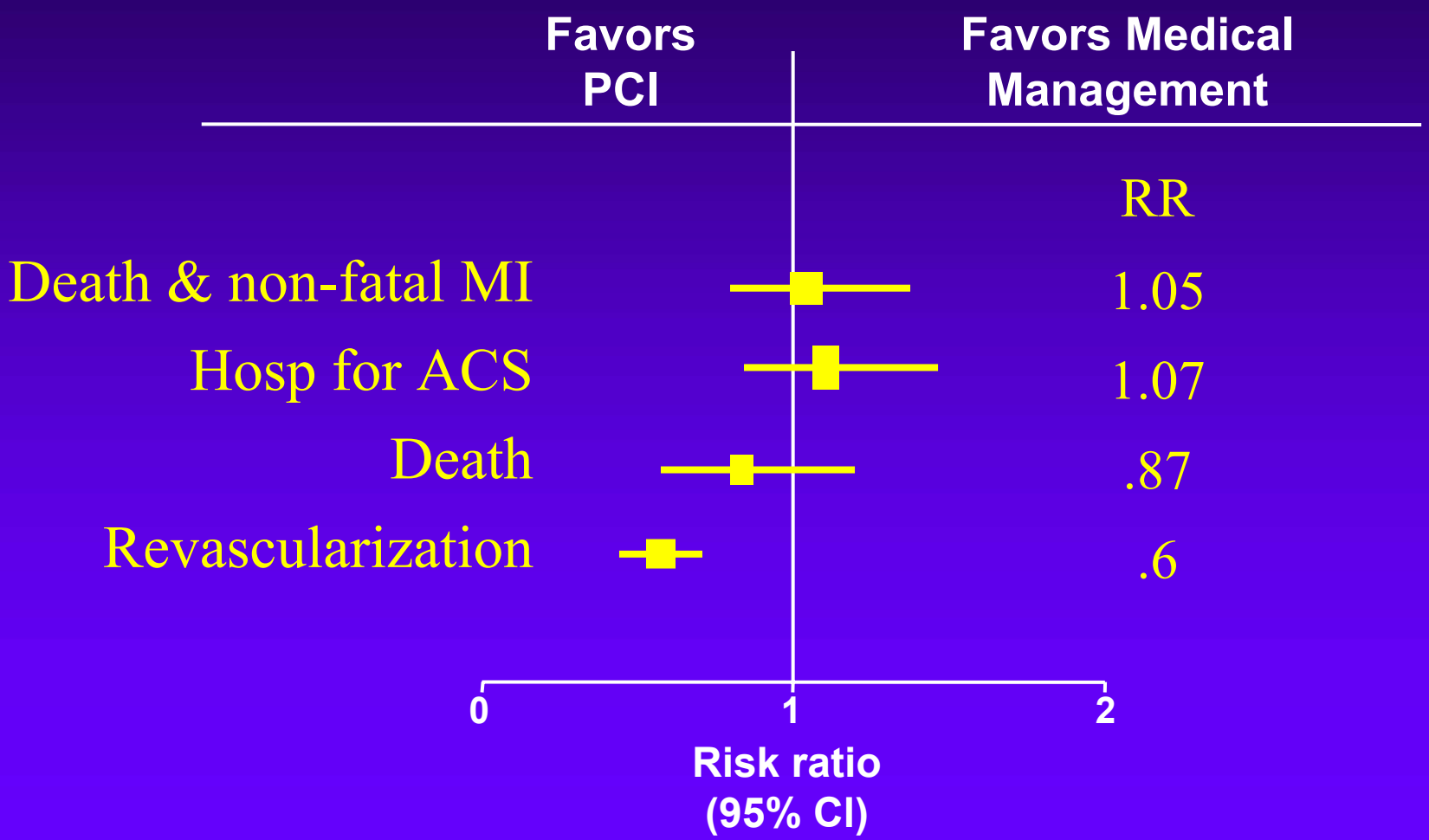
By Steve Sternberg
USA TODAY

NEW ORLEANS — Thousands of people with crushing chest pain who once opted for angioplasty as a quick fix may change their minds based on a landmark study out Monday showing that medication costs less, poses fewer risks and works just as well.

"I think this will change the discussion between the patient and doctor," says Raymond Gibbons of the



COURAGE Endpoints



Design and rationale of the Clinical Outcomes Utilizing Revascularization and Aggressive DruG Evaluation (COURAGE) trial: Veterans Affairs Cooperative Studies Program no. 424

Death & MI	PCI	OMT
Projected	16.4%	21%
Actual	19%	18.5%

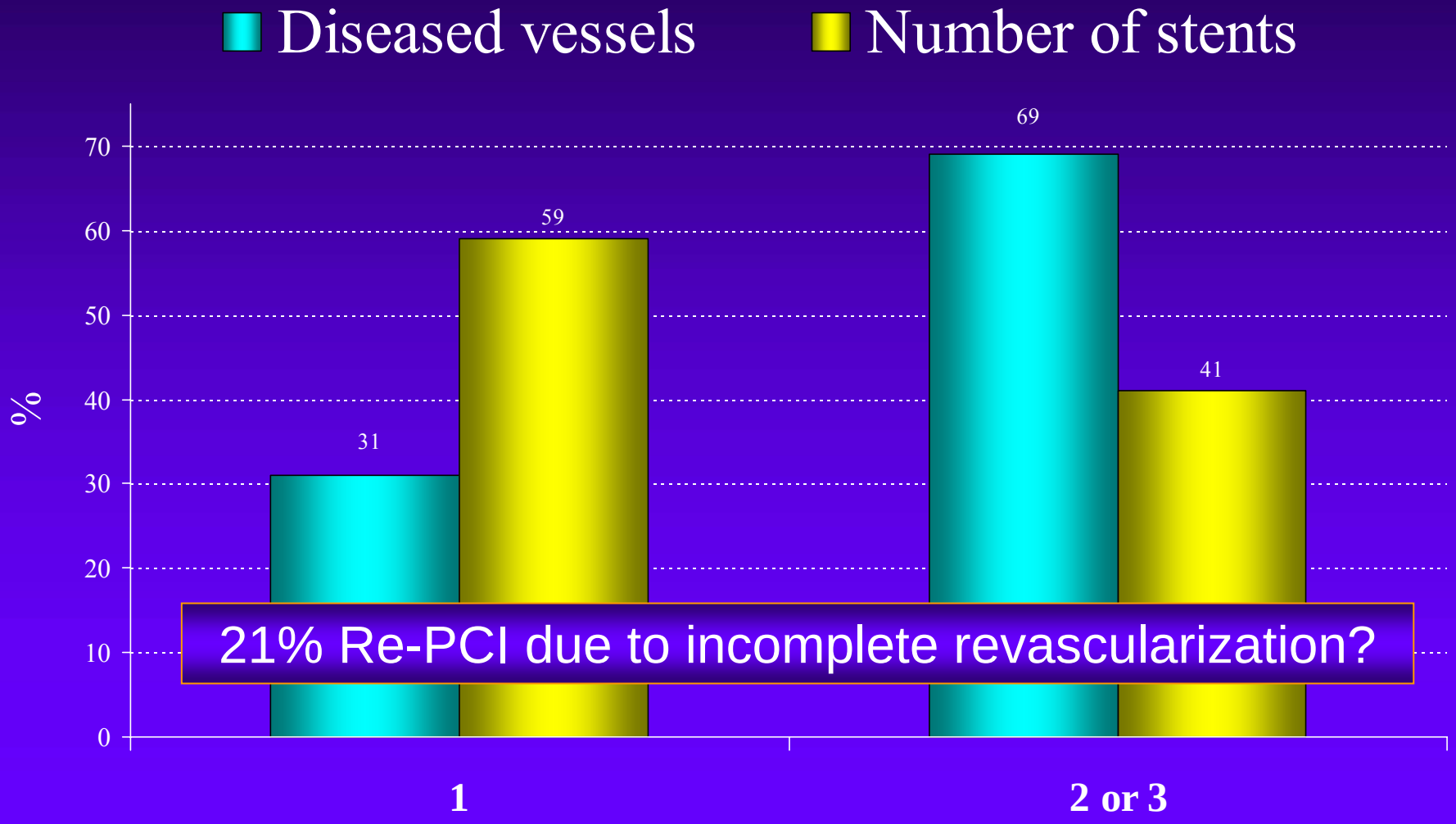
Background M… coronary heart disease have occ… the "hard" clinical end points of d… tents and aggressive multifaceted…

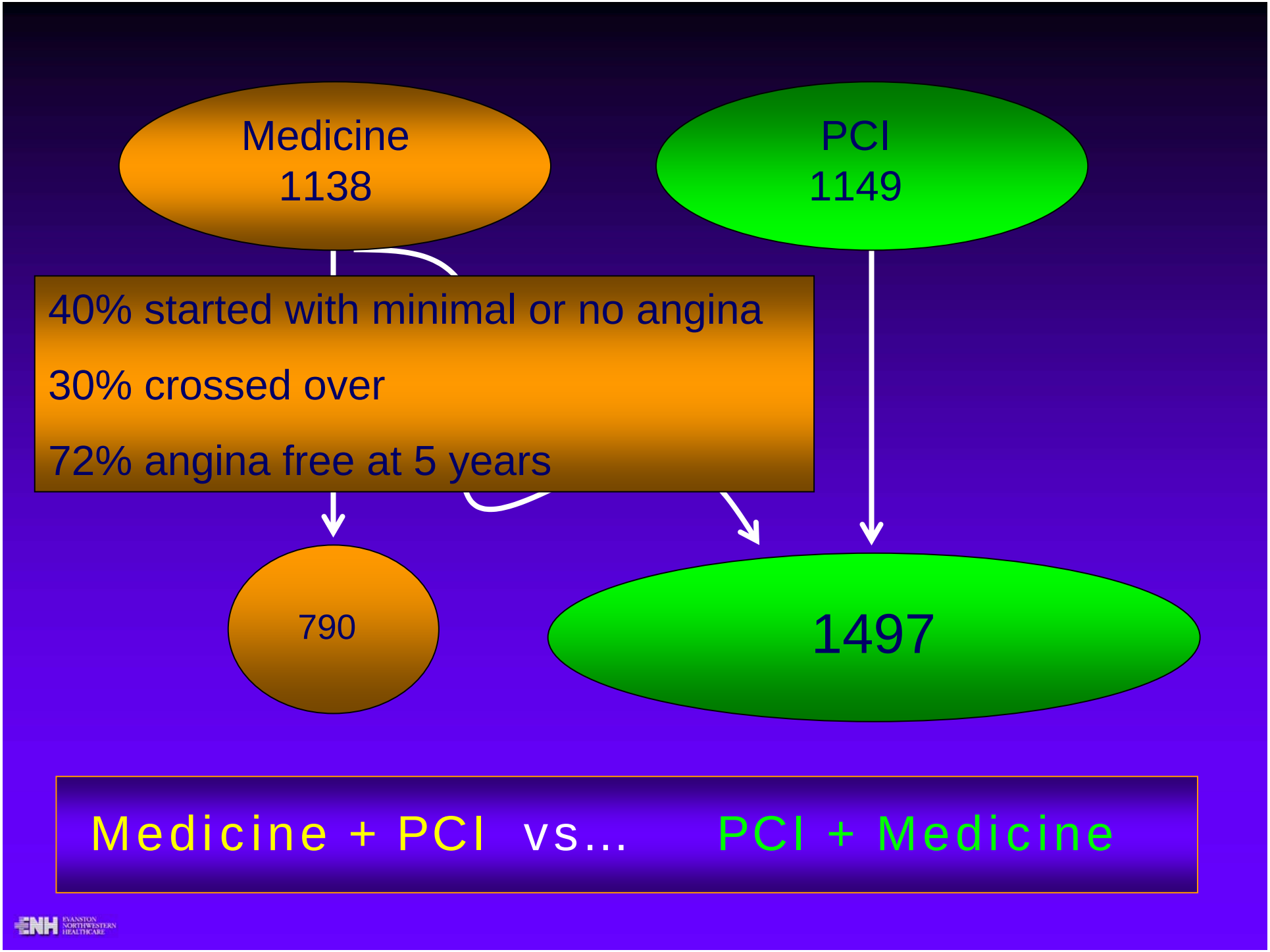
Methods The CO… angiographically confir… PCI plus intensive medical thera… n and includes: aspirin, clopidogrel, simvastatin (low-density lipoprotein cholesterol target 80-85 mg/dL), long-acting metoprolol and/or amlodipine, lisinopril or losartan, and long-acting nitrates, as well as lifestyle interventions. The primary end point is a composite of all-cause mortality or acute myocardial infarction, and there will be 85% power to detect an absolute 4.6% (relative 22%) difference between strategies. The principal hypothesis is that PCI plus aggressive medical therapy (projected event rate 16.4%) will be superior to aggressive medical therapy alone (projected event rate 21%) during a 2.5- to 7-year (median of 5 years) follow-up.

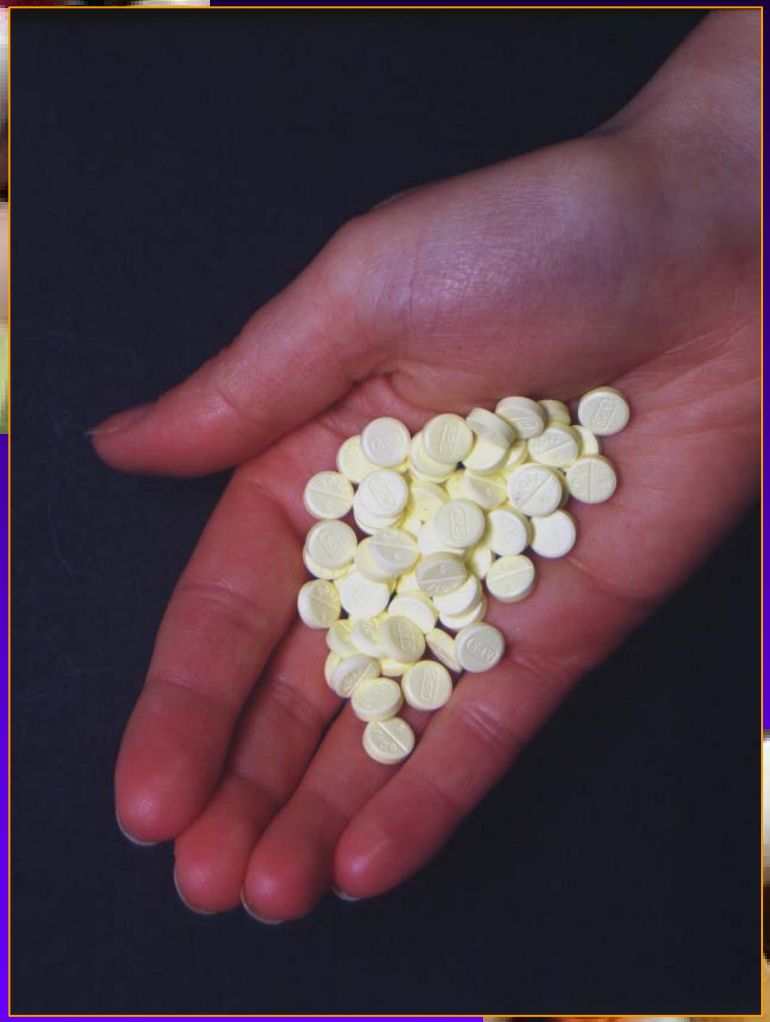
Conclusions COURAGE is the largest prospective randomized trial of PCI versus intensive medical therapy to date and will define the incremental benefits of PCI in the setting of contemporary optimal medical therapy for chronic coronary heart disease. A total of 2287 patients have been enrolled, and follow-up will conclude in June 2006. (Am Heart J 2006; 151:1173-9.)

Incomplete Revascularization

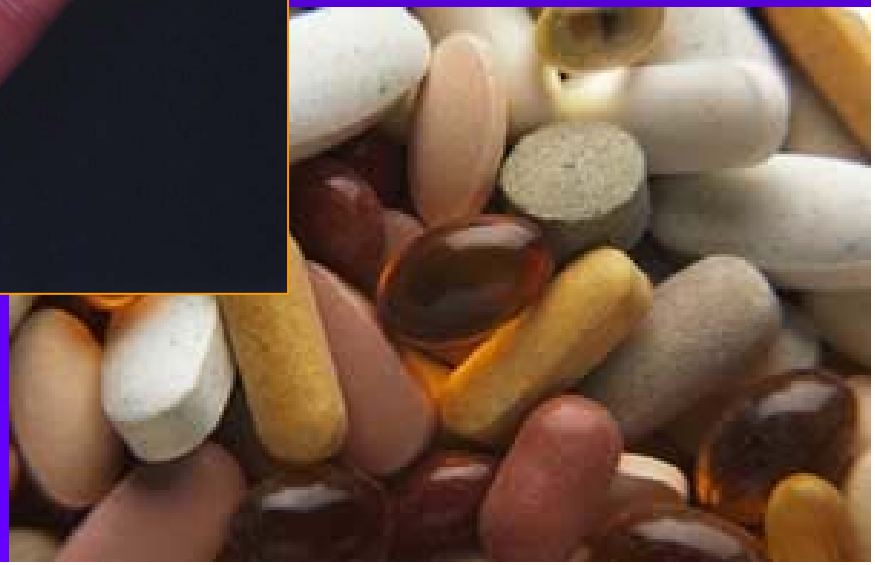
POBA 14.5% - DES 1.8%




Medicine
1138
PCI
1149
40% started with minimal or no angina
30% crossed over
72% angina free at 5 years
790
1497
Medicine + PCI vs... PCI + Medicine



- ACE or ARB
- Statin
- Other anti-lipid
- ASA
- β-blocker
- Ca-blocker
- Nitrate
- hypoglycemic

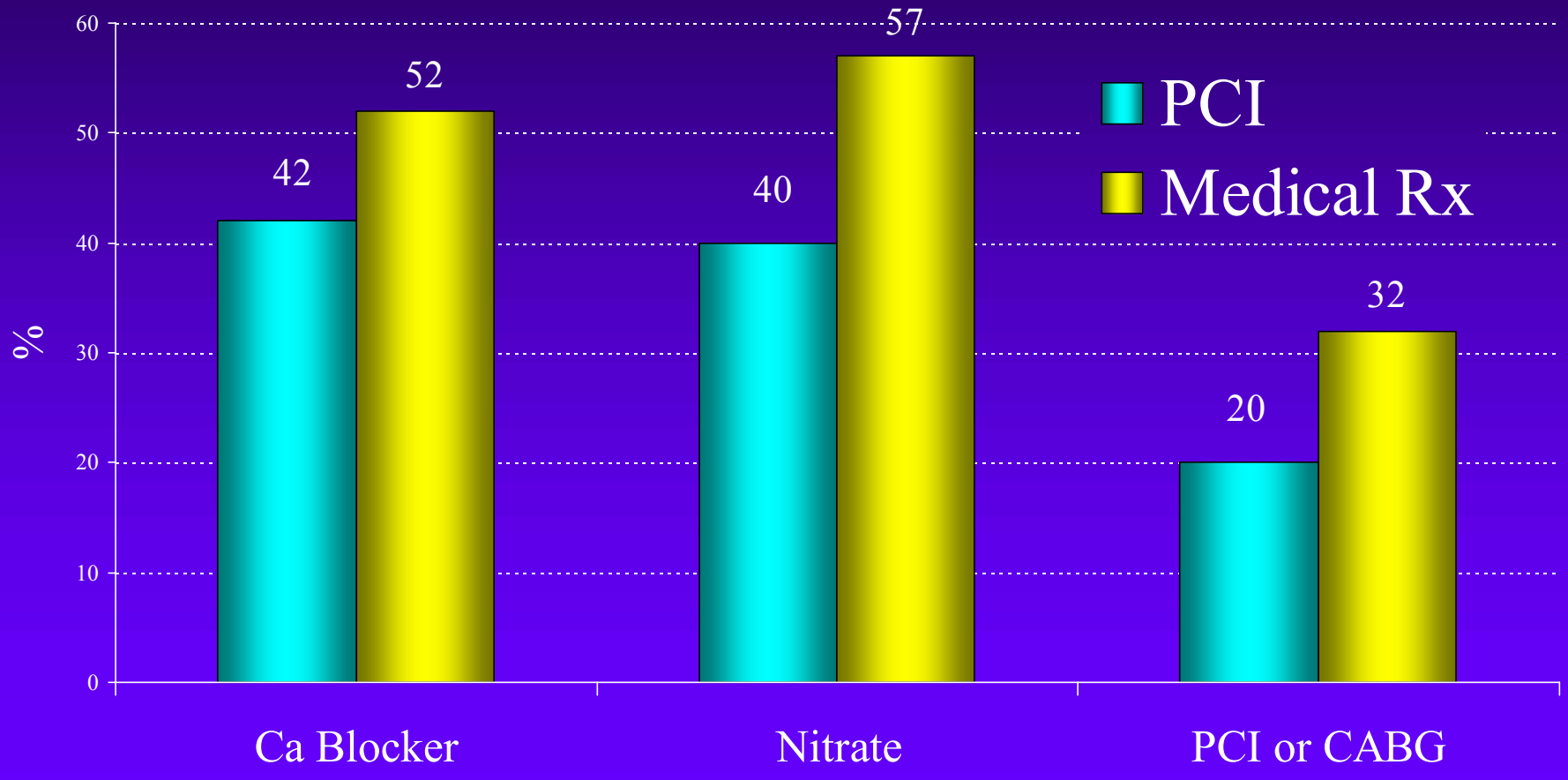


Long-Term Improvement in Treatment Targets

Group Median ± SE Data

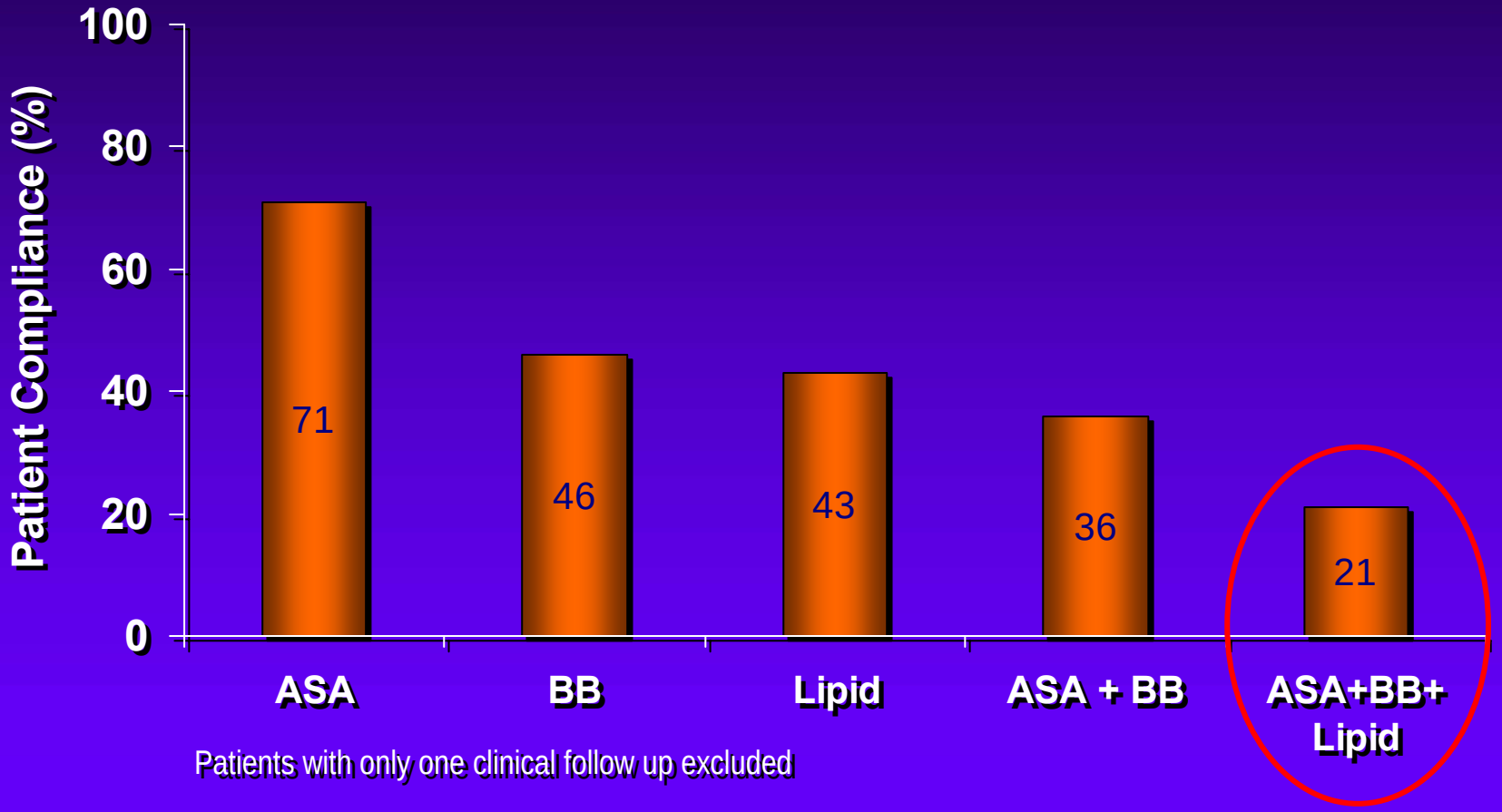
Treatment Targets	Baseline		60 Months	
	PCI +OMT	OMT	PCI +OMT	OMT
SBP	131 ± 0.77	130 ± 0.66	124 ± 0.81	122 ± 0.92
DBP	74 ± 0.33	74 ± 0.33	70 ± 0.81	70 ± 0.65
Total Cholesterol mg/dL	172 ± 1.37	177 ± 1.41	143 ± 1.74	140 ± 1.64
LDL mg/dL	100 ± 1.17	102 ± 1.22	71 ± 1.33	72 ± 1.21
HDL mg/dL	39 ± 0.39	39 ± 0.37	41 ± 0.67	41 ± 0.75
TG mg/dL	143 ± 2.96	149 ± 3.03	123 ± 4.13	131 ± 4.70
BMI Kg/M²	28.7 ± 0.18	28.9 ± 0.17	29.2 ± 0.34	29.5 ± 0.31
Moderate Activity (5x/wk)	25%	25%	42%	36%

Anti-Anginal Therapy after 5 Years



CRUSADE Registry

Compliance with Medical Therapy in Patients with CAD



Duke Databank for Cardiovascular Disease (1995-2002) AHA 2005

- Selected population
- Rigorous optimal medical therapy (OMT) regimen
- Incomplete revascularization
  - BMS & POBA
  - procedure success 89%
  - device success 93%
- Trend toward less mortality with PCI
- High rate of cross-over in OMT arm
- Reinforces existing guidelines

A Randomized Controlled Trial for the Prevention of Contrast Induced Nephropathy with Sodium Bicarbonate in Persons Undergoing Coronary Angiography (MEENA)

Somjot S. Brar, MD

Kaiser Permanente
Los Angeles Medical Center

MEENA trial

KAISER PERMANENTE

Study Flow

353 Patients Undergoing Coronary Angiography, GFR ≤60

R

(1:1)

Sodium Chloride

178 Patients

22 Excluded*
- 6 Had early CABG
- 3 Had Early PCI
- 11 Had Incomplete Follow Up Lab Data
- 2 Had the Coronary Angiogram Canceled

156 Patients

Sodium Bicarbonate

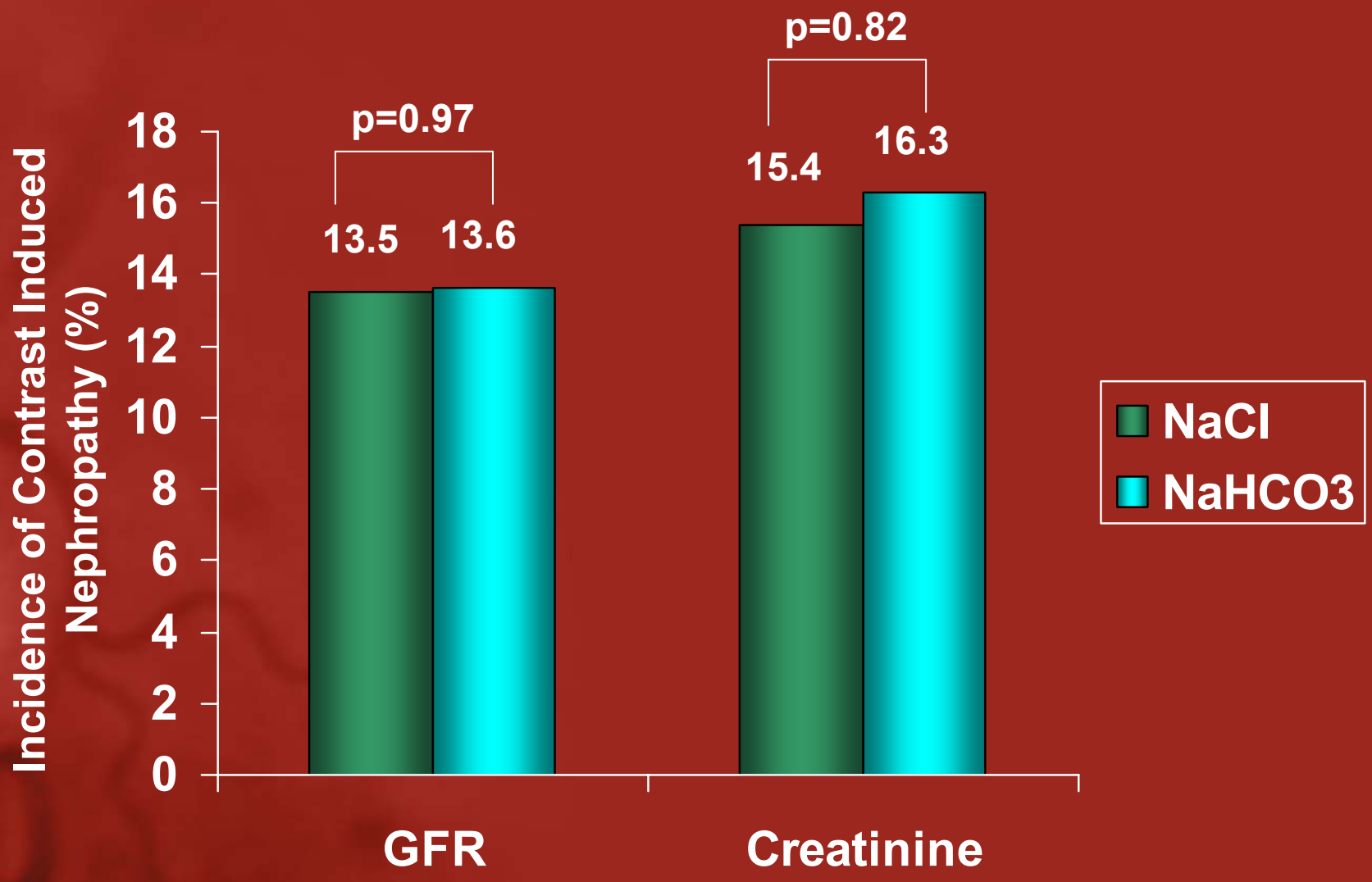
175 Patients

28 Excluded*
- 8 Had Early CABG
- 3 Had Early PCI
- 16 Had Incomplete Follow Up Lab Data
- 1 Had the Coronary Angiogram Canceled

147 Patients

*** p=0.33**

GFR & Creatinine Endpoints



MEENA trial

KAISER PERMANENTE

Conclusion

Hydration with Sodium Bicarbonate or Sodium Chloride in patients undergoing coronary angiography with a GFR ≤ 60 resulted in very similar rates of Contrast Induced Nephropathy.

Disclosures

DISCLOSURE INFORMATION:

The following relationships exist related to this presentation:

None

UNLABELED/UNAPPROVED USE:

The following products are not labeled for the use under discussion or are still investigational:

Sodium Bicarbonate for the Prevention of Contrast Induced Nephropathy

w REsponsiveness to CLOpidogrel and Sirolimus- or Paclitaxel-Eluting StEnt Thrombosis (RE-CLOSE) Trial

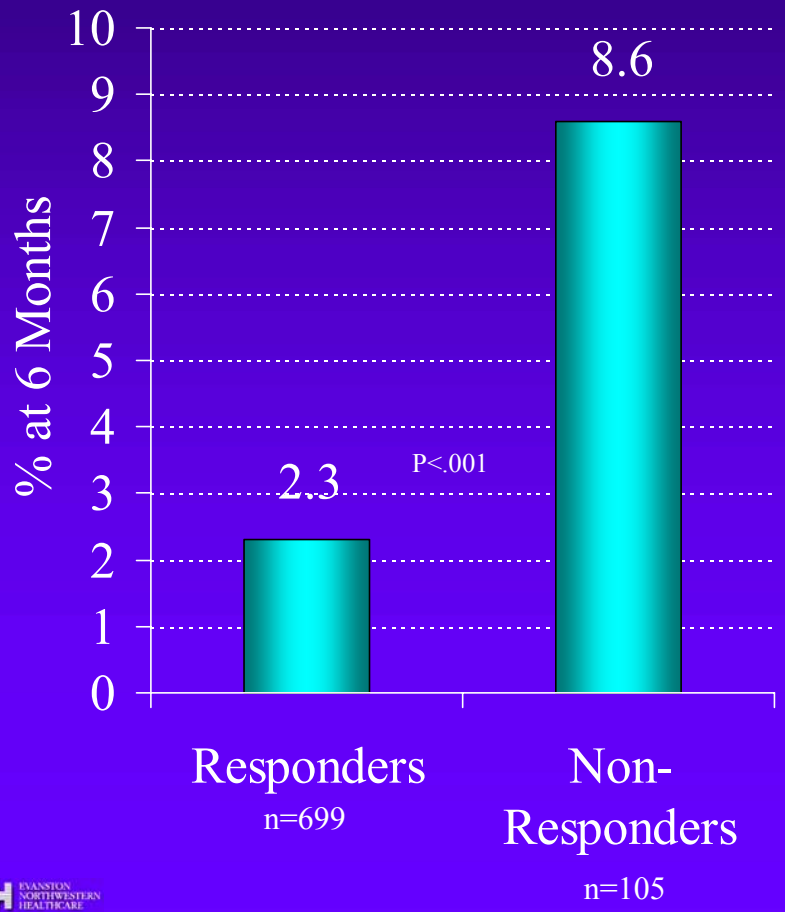
Department of Cardiology, Careggi Hospital, Florence, Italy

Investigators: Abbate R (PI), Antoniucci D (PI), Buonamici P, Gensini GF, Gori AG, Marcucci R, Migliorini A, Moschi G, Paniccia R, Santini A

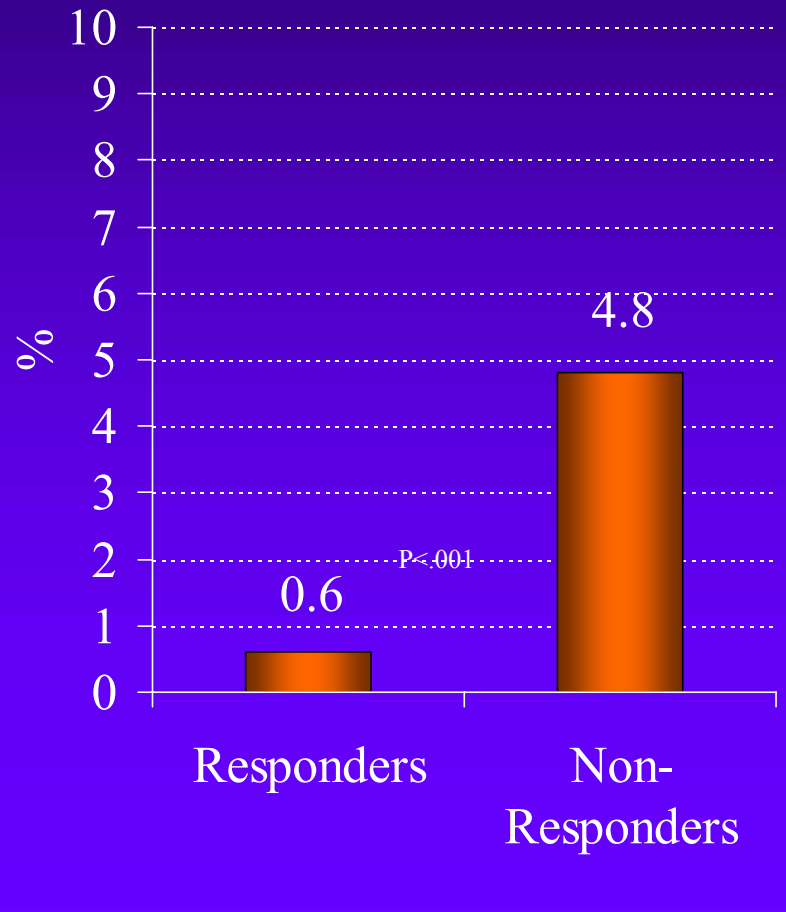
David Antoniucci, MD, ACC 2007

Primary End Point

Definite/Probable Thrombosis



Late Stent Thrombosis



EVANSTON NORTHWESTERN HEALTHCARE

Long-Term Safety of DES in Off-Label Use: Results of the MATRIX Registry

George D. Dangas, MD, PhD, FACC
On Behalf of the Matrix Investigators

Cardiovascular Research Foundation
Columbia University Medical Center

MATRIX: Goals and Design

- Prospective single arm study initiated in 2004 as a 3,500 patient trial under an investigator-initiated IDE
- Both on- and off-label SES use
- Clinical follow-up at 1 month, 6 months, 1 year and 2 years thus far

Procedural Characteristics

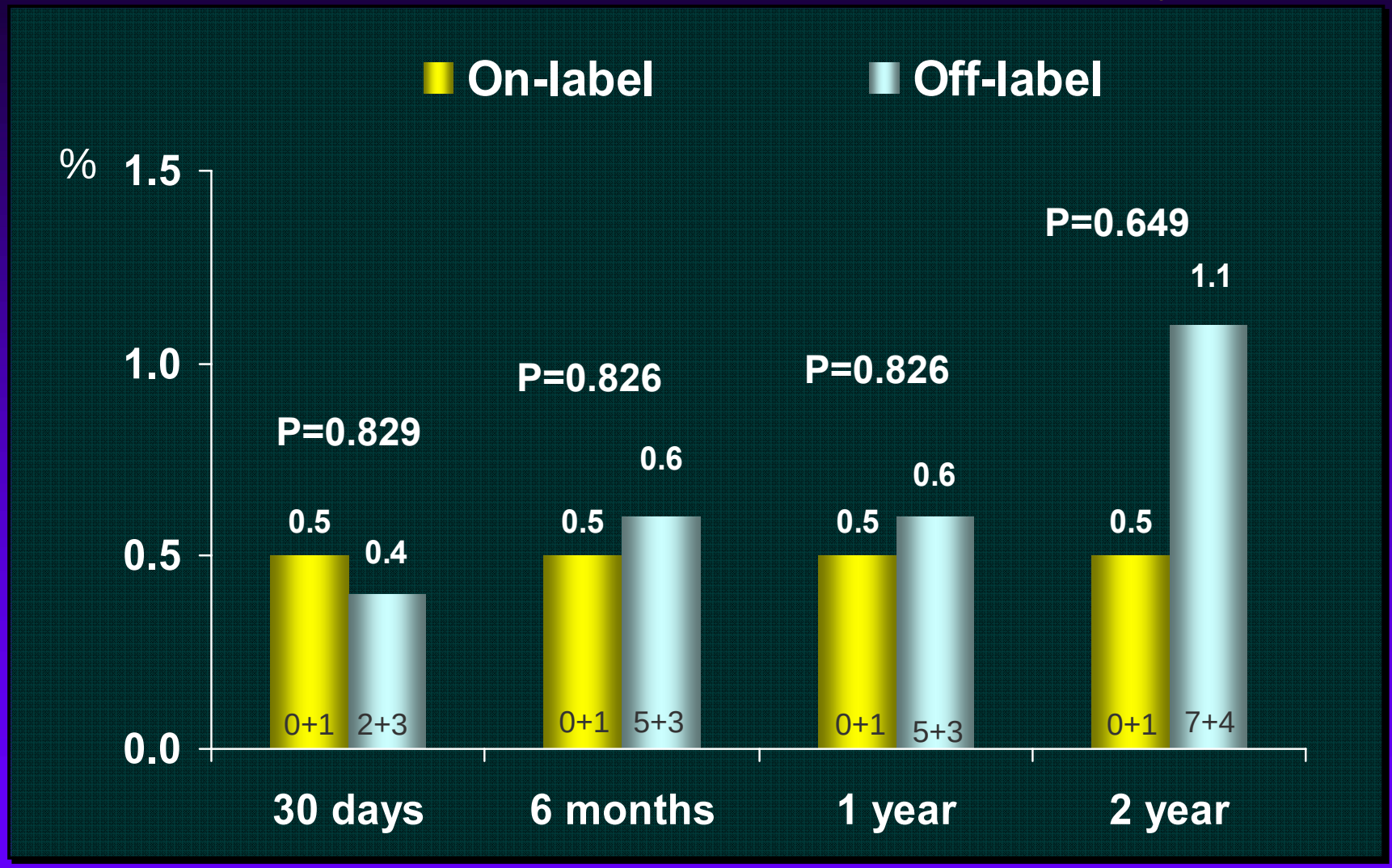
	N = 1,522 patients	
No. of stents per procedure	2.0±1.2	
No. of stents per lesion	1.1±0.5	
Unfractionated heparin	16.0%	
Bivalirudin used	84.9%	
IIb/IIIa inhibitors administered	8.1%	
Procedure success	95.6%	89%
Device success (N=2608 Lesions)	98.5%	93%

On-Label Use of Cypher Stent

- The CYPHER Sirolimus-eluting Coronary Stent is indicated in patients with symptomatic ischemic disease due to discrete de novo lesions of length < 30 mm in native coronary arteries with a reference vessel diameter of > 2.5 to < 3.5 mm (http://www.fda.gov/cdrh/PDF2/p020026c.pdf).
- **On-label definition in MATRIX: De novo lesion; 1 lesion; 1 vessel; Lesion length < 30mm; RVD 2.5-3.5mm; Also excluding:**
  - **Diffuse disease**
  - **Multivessel PCI; PCI with 3 of more SES**
  - **Use of rotablator, atherectomy or laser**
  - **Use of thrombectomy or intracoronary thrombus**
  - **Acute ST elevation MI within 72 hours before the procedure**
  - **ACS with positive CKMB prePCI**
  - **Ostial lesions**
  - **Bifurcation lesions**
  - **Chronic occlusions, baseline TIMI flow 0 or 1**
  - **Vein grafts, LIMA/RIMA, radial or GEA grafts**
  - **Angioplasty restenosis or in-stent restenosis**
  - **Severe calcification; Severe tortuosity**

14% Of Patients in MATRIX w/o any of above

Stent Thrombosis (K-M analysis)



* Stent thrombosis included the definite and probable thromboses by ARC

Prediction of 2-Year Adverse Outcomes

Multivariate Predictors Using Cox Model

2-Year Events	Hazard Ratio	95% CI	p
Death (32 events)			
Age, y	1.09	1.05 - 1.13	<0.0001
DM	4.03	1.94 - 8.38	0.0002
Dialysis	6.69	1.58 - 28.34	0.0099
Cardiac death (11 events)			
Age, y	1.11	1.04 - 1.18	0.0028
DM	3.81	1.11 - 13.08	0.0334
Definite or probable stent thrombosis (12 events)			
Chronic Renal Insufficiency	4.45	1.34 - 14.79	0.0148
Lesion length, mm	1.03	0.99 - 1.07	0.0977

Candidate predictors included on-label use, ACS, multivessel/stent PCI, RVD, clopidogrel.

Prediction of 2-Year Adverse Outcomes

Multivariate Predictors Using Cox Model

2-Year Events	Hazard Ratio	95% CI	p
MI (43 events)			
Age, y	1.03	1.00 to 1.06	0.0325
Male	0.50	0.27 to 0.93	0.0273
Renal insufficiency	2.83	1.42 to 5.64	0.0031
Lesion length, mm	1.03	1.01 to 1.06	0.0024
TVR (107 events)			
On-label	0.53	0.26 to 1.10	0.0870
Age, y	0.98	0.96 to 0.99	0.0156
DM	1.72	1.18 to 2.52	0.0051

Candidate predictors included on-label use, ACS, multivessel/stent PCI, RVD, clopidogrel.

MATRIX - Conclusions

In 1,522 patients with complex CAD treated with SES, off-label use of SES using a strict definition was evident in 86% of patients.

In Matrix, we found:

- Low frequency of early and late adverse events considering the complexity of patients and lesions treated
  - 2-year death 3.3%, death/MI 6.8%, death/MI/TVR 15.6%
- 2-year stent thrombosis rate 1.1%
  - ARC definite/probable definitions
  - Independent event adjudication
- Similar mortality in on- vs off-label use
  - MI and TVR were higher with off-label application
  - Independent predictors of mortality, stent thrombosis and MI included baseline patient and lesion characteristics (i.e. Age, DM, Renal failure, lesion length) as opposed to off-label application and procedure factors.

ABSORB

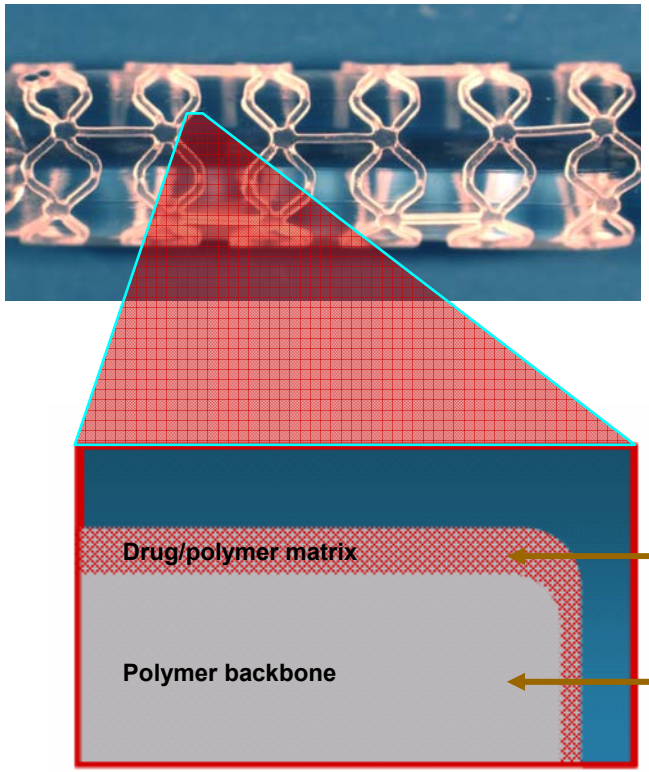
Clinical Evaluation of the Abbott Vascular BVS Bioabsorbable Everolimus Eluting Coronary Stent System in the Treatment of Subjects with de novo Native Coronary Artery Lesions

Patrick Serruys, MD, PhD

Co-Principal Investigator of the ABSORB Trial

Bioabsorbable Polymer

ABSORB



Everolimus/PLA Matrix Coating

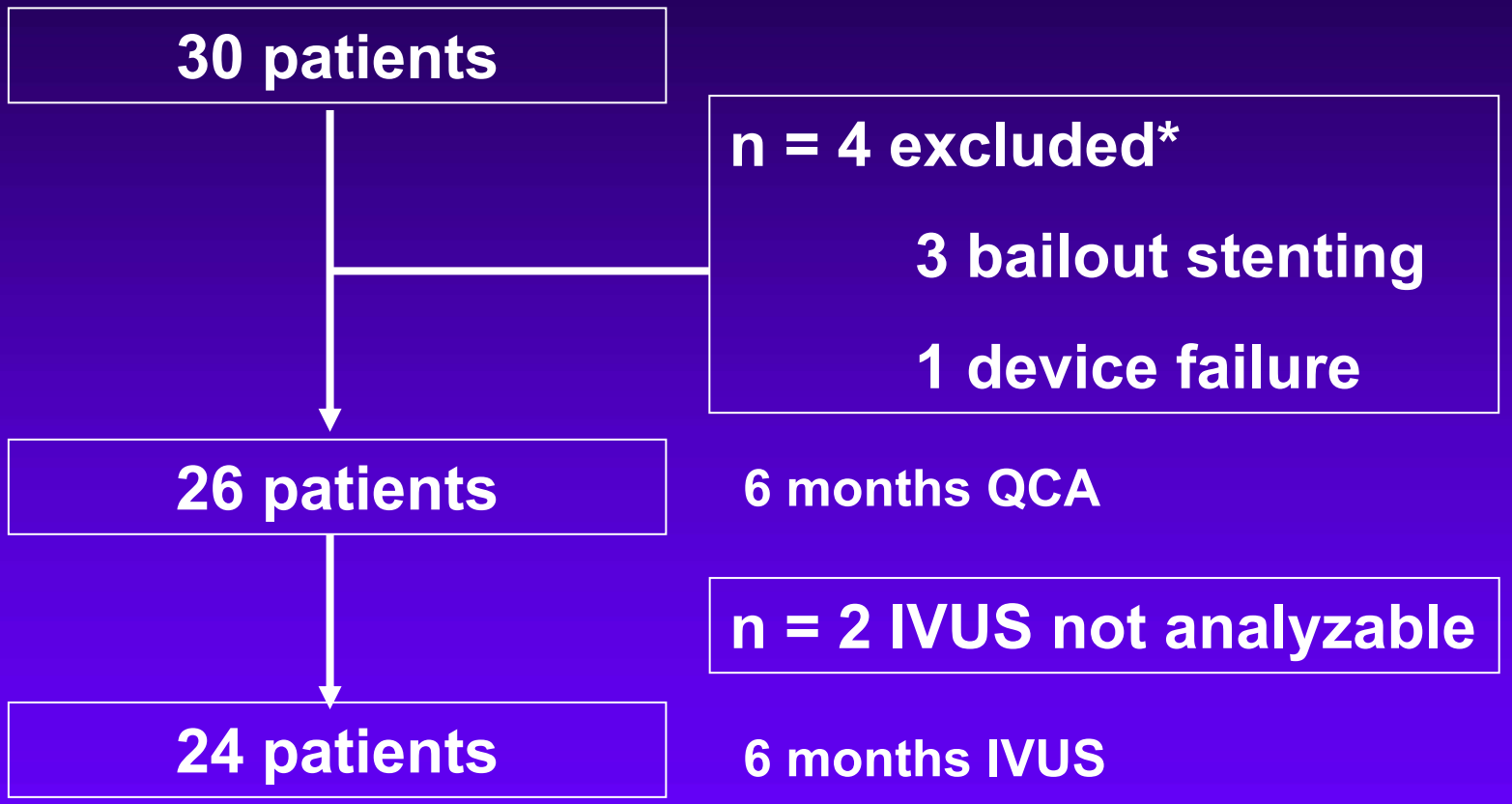
- Thin coating layer
- Amorphous (non-crystalline)
- 1:1 ratio of Everolimus/PLA matrix
- Conformal Coating
- Controlled drug release

PLA Stent Backbone

- Highly crystalline
- Provides stent integrity
- Processed for increased radial strength

Product currently in development at Abbott Vascular. Not available for sale.

QCA/IVUS Patient inclusion

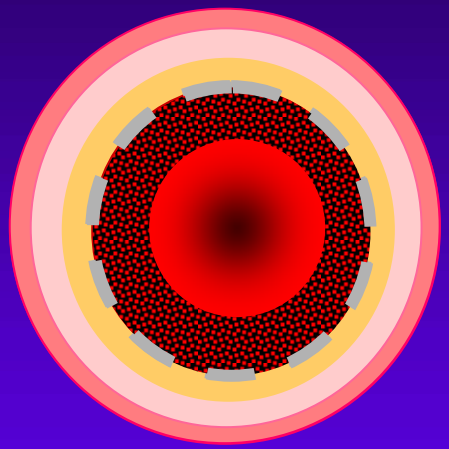
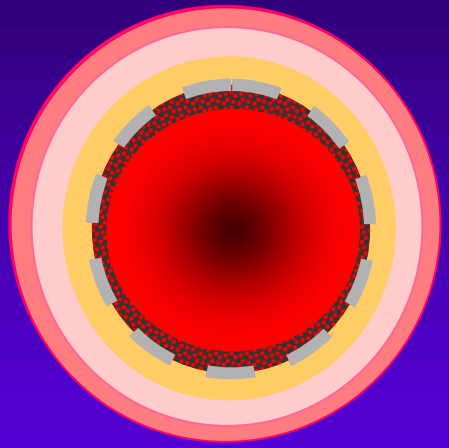
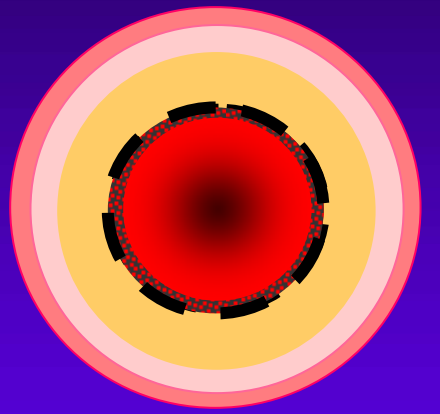


* Per treatment evaluable population. Four patients were excluded who received a non-BVS bailout stent, including one patient who did not receive a BVS stent at the target lesion.

Product currently in development at Abbott Vascular. Not available for sale.

What is Contributing to Late Loss?

ABSORB

SPIRIT-First ML Vision Stent	SPIRIT-First Xience V Stent	ABSORB BVS Stent
		
Late Loss = 0.87mm	Late Loss = 0.10mm	Late Loss = 0.44mm
Δ Vessel Area (mm^2) = -0.29 *(-1.9%)* Δ Stent Area (mm^2) = -0.14 *(-2.0%)* Δ Lumen Area (mm^2) = -2.12 *(-29.4%)* NIH Area (mm^2) = 1.98 % VO = 28.1%	Δ Vessel Area (mm^2) = 0.19 *(+1.2%)* Δ Stent Area (mm^2) = -0.02 *(-0.3%)* Δ Lumen Area (mm^2) = -0.51 *(-7.2%)* NIH Area (mm^2) = 0.50 % VO = 8.0%	Δ Vessel Area (mm^2) = -0.06 *(-0.4%)* Δ Stent Area (mm^2) = -0.71 *(-11.7%)* Δ Lumen Area (mm^2) = -1.01 *(-16.6%)* NIH Area (mm^2) = 0.30 % VO = 5.5%

ENH EVANSTON NORTHWESTERN HEALTHCARE

Randomized Comparison of the Effect of Distal Protection and Drug Eluting Stent versus Bare Metal Stent Implantation during Percutaneous Coronary Intervention for ST-elevation Myocardial Infarction

The DEDICATION study

Leif Thuesen, Henning Kelbæk, Jens F. Lassen, Christian Juhl Terkelsen, Peter Clemmensen, Steffen Helqvist, Lene Kløvgaard, Anne Kaltoft, Lars Krusell, Kari Saunamäki, Erik Jørgensen, Hans E. Bøtker, Jan Ravkilde, Klaus Kofoed, Hans Henrik T. Hansen, Evald H. Christiansen, Thomas Engstrøm, Lars Køber

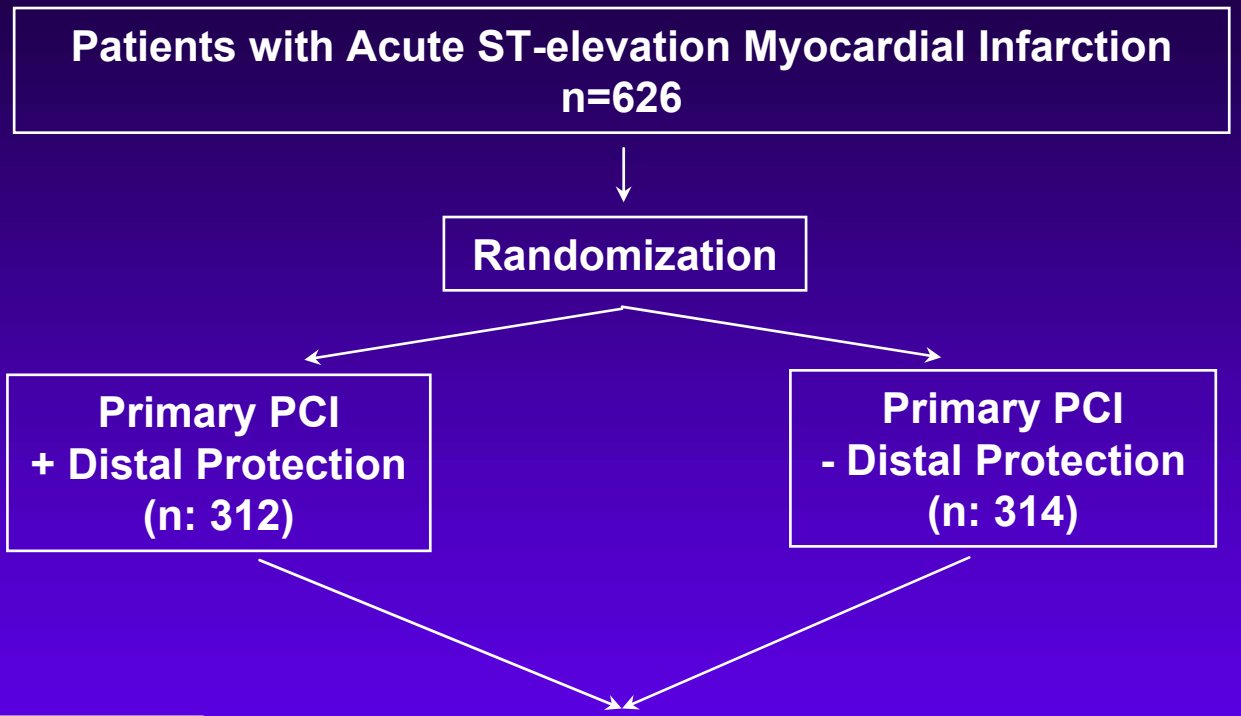
Rigshospitalet, Copenhagen

Aarhus University Hospital, Skejby

Denmark

ENH EVANSTON NORTHWESTERN HEALTHCARE

Flow Chart



Primary end point

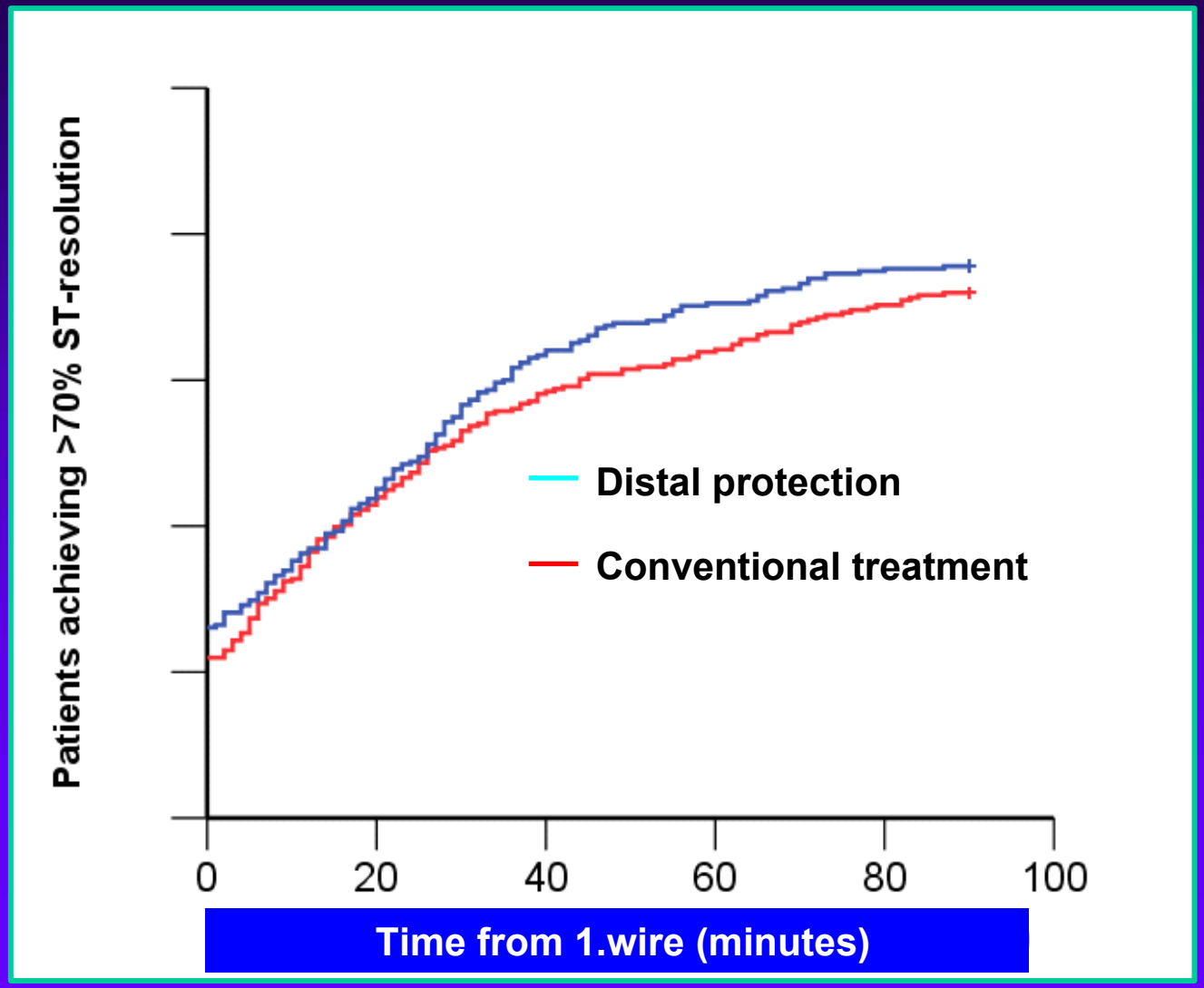
ECG ST-resolution at 30-90 min

Secondary endpoints

Post procedure TIMI flow
Wall motion index at discharge
Cardiac biomarker release
Major adverse cardiac and cerebral events at 30 days

DEDICATION

Primary Endpoint: ST-Segment Resolution



EVEREST Registry

Significant Reduction in Mitral Regurgitation Twelve Months Following Percutaneous Mitral Valve Repair:

Initial Experience With the MitraClip Device

Ted Feldman, M.D., FSCAI, FACC

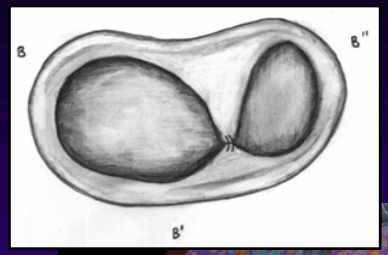
for the EVEREST Investigators

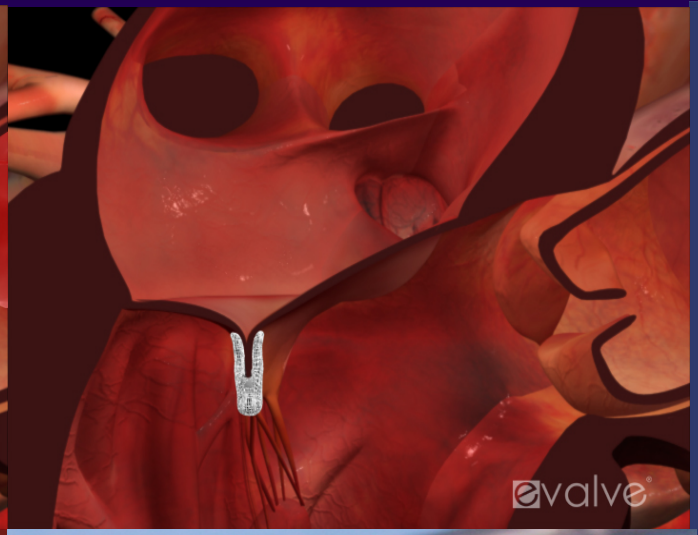
ACC - New Orleans

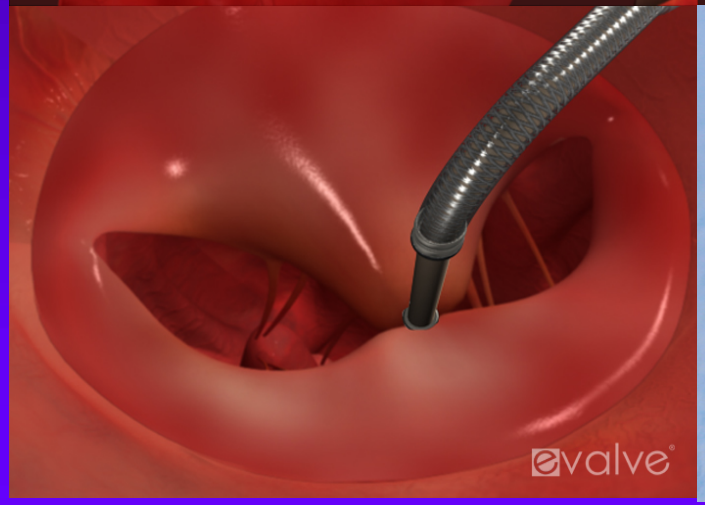
March 26th 2007

EVANSTON NORTHWESTERN HEALTHCARE

Percutaneous Mitral Repair





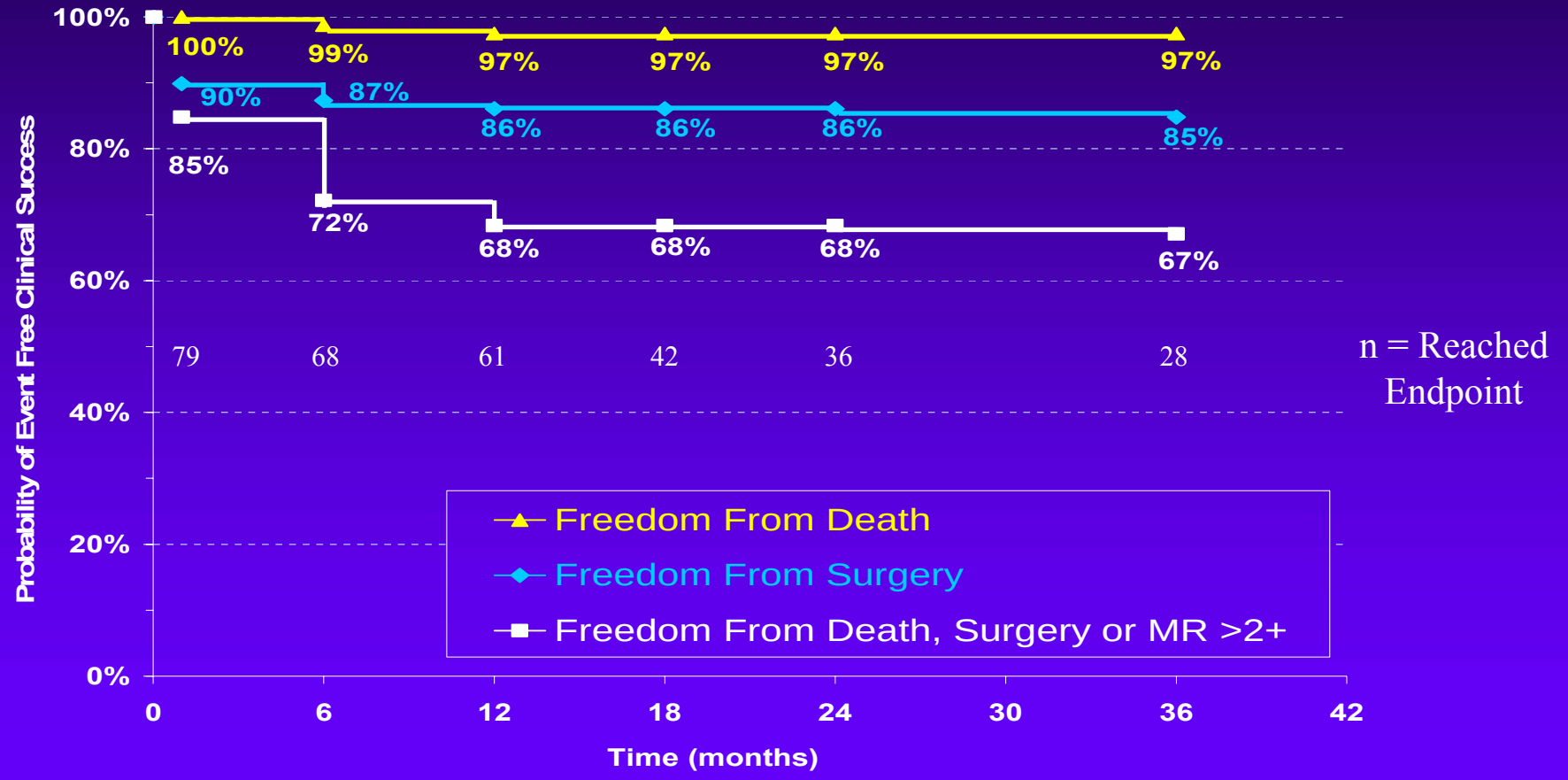


Caution: Investigational Device. Limited by Federal (US) Law to Investigational Use

Event Free Clinical Success Kaplan-Meier

Patients with Acute Procedural Success

n = 79



n = Reached Endpoint

Freedom from death, mitral valve surgery, & MR>2

EVANSTON NORTHWESTERN HEALTHCARE

EVOLUTION

(Clinical EValuation Of the Edwards Lifesciences PercUTaneous MItral

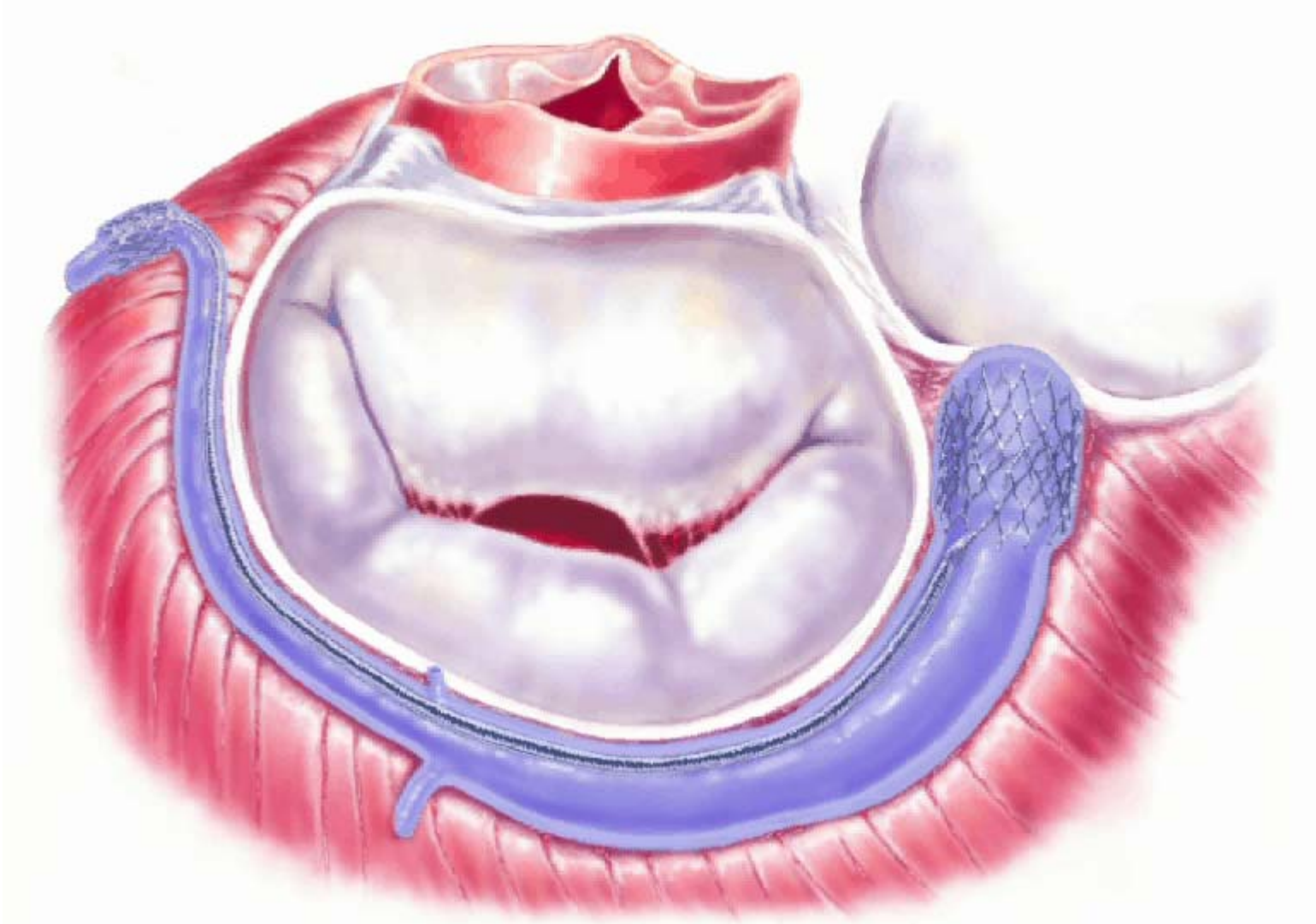
AnnulOplasty System for the treatment of Mitral RegurgitatioN)

Interim Results and Case Experience

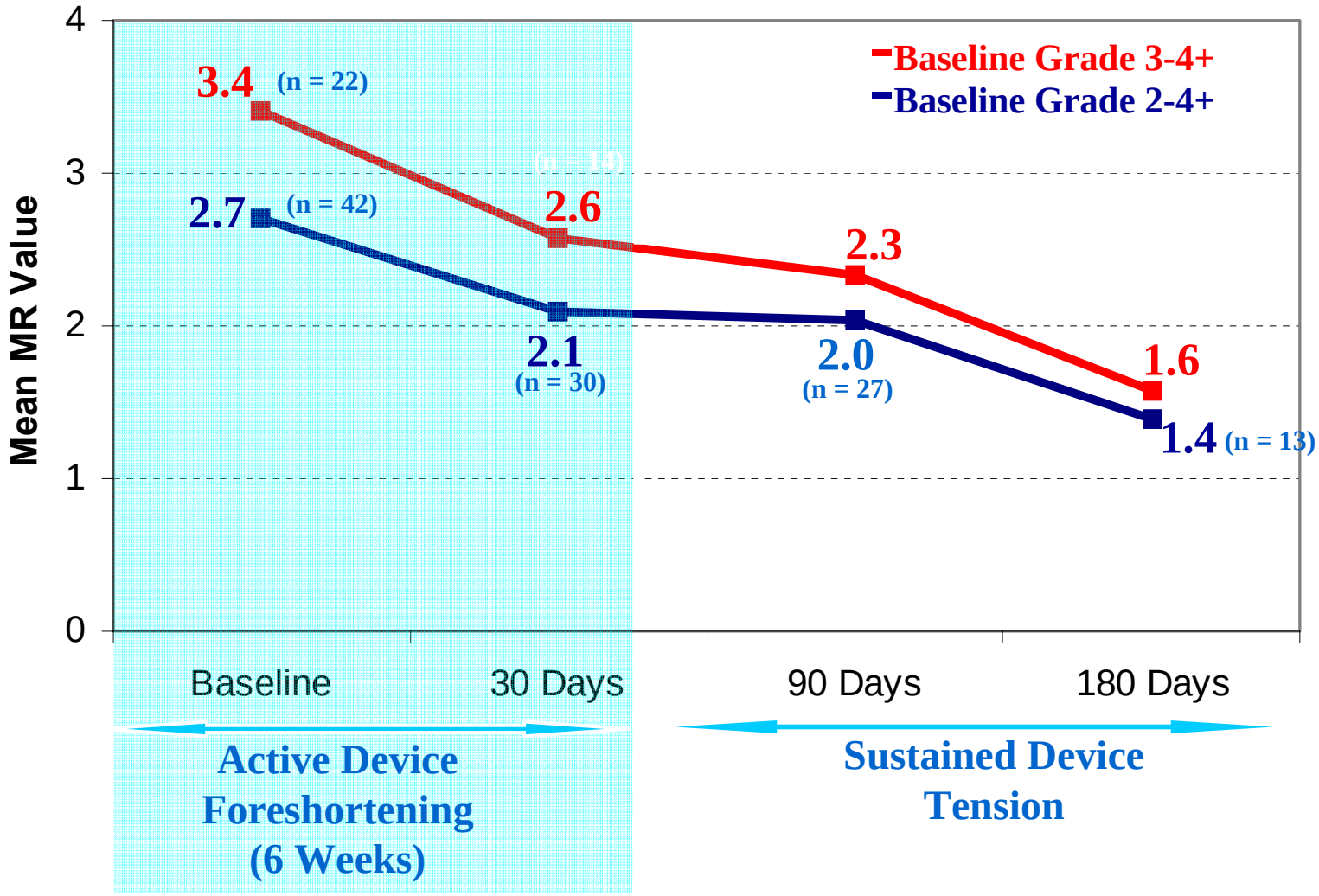
Karl Heinz Kuck, MD,
Hamburg, Germany

Caution: Investigational Device. Limited by Federal (US) Law to Investigational Use. Not offered in the United States

The MONARC system
Delayed Release-*in situ*



EVOLUTION study interim performance data



Echo Core Lab data