NSTEACS – Case Presentation

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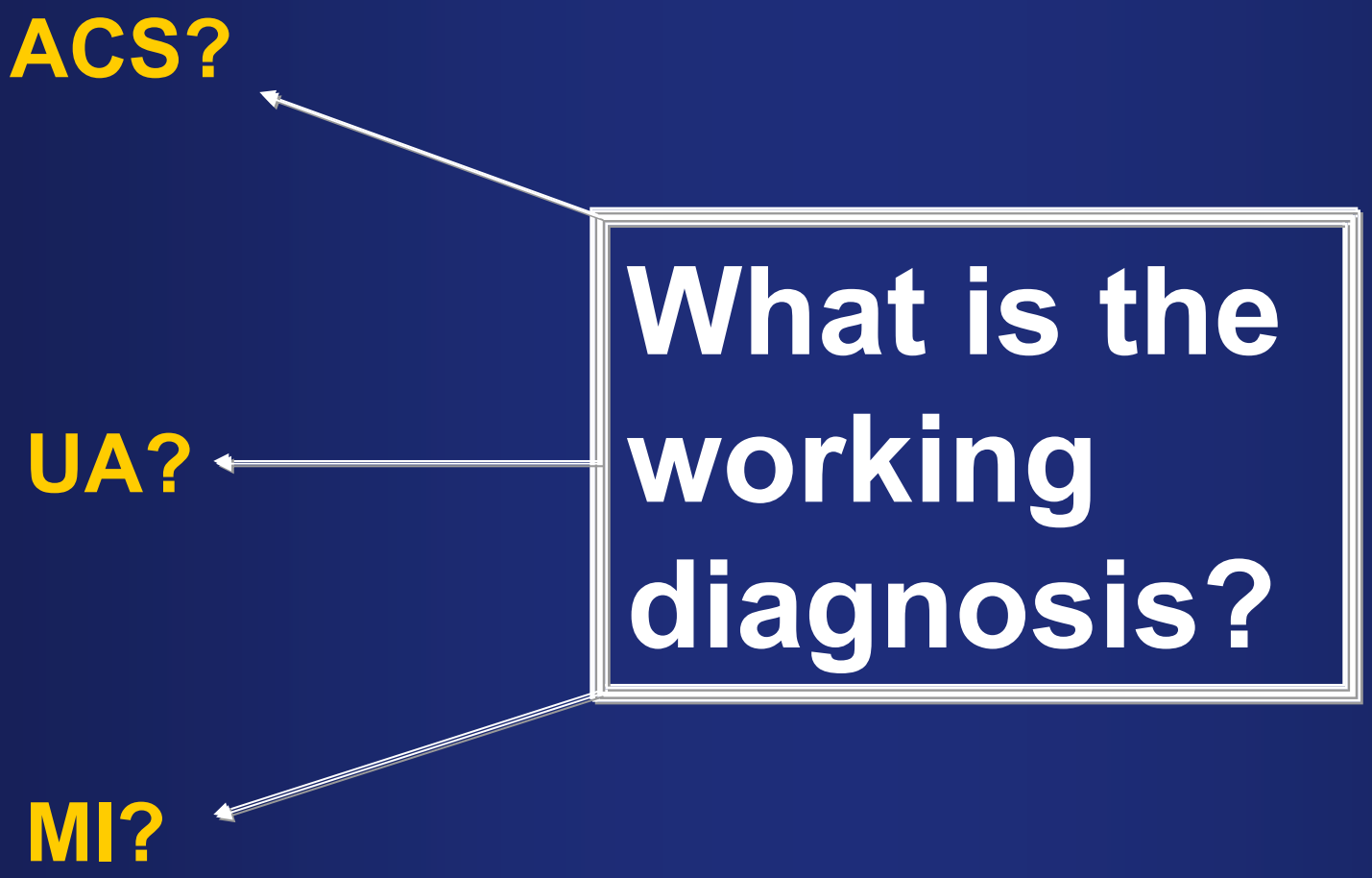
Case Presentation

- 64 Y. old male
- HLP, HTN, smoker
- Prolonged typical CP at rest, multiple episodes
- No ECG changes
- No previous Hx of CVD
- On ACE inhibitor, statin
- Positive Tn

- PE – no evidence of HF, BP = 146/89, HR – 78, no bruits


ACS?
UA?
MI?
What is the working diagnosis?

2007 Universal Definition of MI

Rise and fall of Troponin (or CK-MB) > 99th percentile of reference range

PLUS one of 4:

1. Ischemic symptoms
2. ECG changes
3. Regional wall motion abnormality
4. Loss of viable myocardium on imaging

J Am Coll Cardiol, 2007; 50:2173-2195,

What else is needed for risk stratification?

- Imaging – Rest Echocardiography is Class I indicated for every patient with ACS, but not necessarily on admission
- However, of importance in ambiguous cases, to asses LV function for medical management selection and to rule out non-cardiac causes of Tn elevation

Risk stratification in ACS – What is the optimal risk score?

Variables Used in the TIMI Risk Score

- Age ≥ 65 years
- At least 3 risk factors for CAD
- Prior coronary stenosis of ≥ 50%
- ST-segment deviation on ECG presentation
- At least 2 anginal events in prior 24 hours
- Use of aspirin in prior 7 days
- Elevated serum cardiac biomarkers

The TIMI risk score is determined by the sum of the presence of the above 7 variables at admission. 1 point is given for each variable. Primary coronary stenosis of 50% or more remained relatively insensitive to missing information and remained a significant predictor of events. Antman EM, et al. *JAMA* 2000;284:835–42.
TIMI = Thrombolysis in Myocardial Infarction.

TIMI Risk Score

TIMI Risk Score	All-Cause Mortality, New or Recurrent MI, or Severe Recurrent Ischemia Requiring Urgent Revascularization Through 14 Days After Randomization %
0-1	4.7
2	8.3
3	13.2
4	19.9
5	26.2
6-7	40.9

Anderson JL, et al. *J Am Coll Cardiol* 2007;50:e1–e157, Table 8.
TIMI = Thrombolysis in Myocardial Infarction.

GRACE Risk Score

Variable	Odds ratio
Older age	1.7 per 10 y
Killip class	2.0 per class
Systolic BP	1.4 per 20 mm Hg ↑
ST-segment deviation	2.4
Cardiac arrest during presentation	4.3
Serum creatinine level	1.2 per 1-mg/dL ↑
Positive initial cardiac biomarkers	1.6
Heart rate	1.3 per 30-beat/min ↑

The sum of scores is applied to a reference monogram to determine the corresponding all-cause mortality from hospital discharge to 6 months. Eagle KA, et al. *JAMA* 2004;291:2727–33. The GRACE clinical application tool can be found at www.outcomes-umassmed.org/grace. Also see Figure 4 in Anderson JL, et al. *J Am Coll Cardiol* 2007;50:e1–e157.
GRACE = Global Registry of Acute Coronary Events.

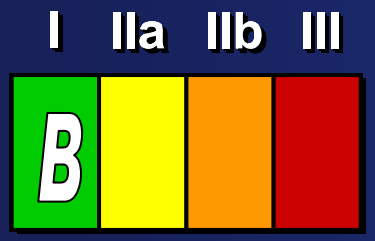
Risk Scores

	TIMI	GRACE
History	Age Hypertension Diabetes Smoking ↑ Cholesterol Family history History of CAD	Age
Presentation	Severe angina Aspirin within 7 days Elevated markers ST-segment deviation	Heart rate Systolic BP Elevated creatinine Heart failure Cardiac arrest Elevated markers ST-segment deviation

Antman EM, et al. *JAMA* 2000;284:835–42. Eagle KA, et al. *JAMA* 2004;291:2727–33.
GRACE = Global Registry of Acute Coronary Events; TIMI = Thrombolysis in Myocardial Infarction.

- The patient is at moderate to high risk according to the TIMI risk score.
- What is the treatment approach? Conservative or Invasive ? Antithrombotic regimen?
- What if the patient was 80 years old?

Anti-Ischemic Therapy

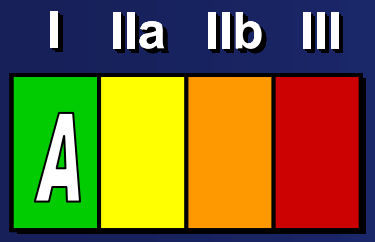


Major Change

Oral beta-blocker therapy should be initiated within the first 24 h for patients who do not have 1 or more of the following: 1) signs of HF, 2) evidence of a low-output state, 3) increased risk* for cardiogenic shock, or 4) other relative contraindications to beta blockade (PR interval greater than 0.24 s, second or third degree heart block, active asthma, or reactive airway disease).

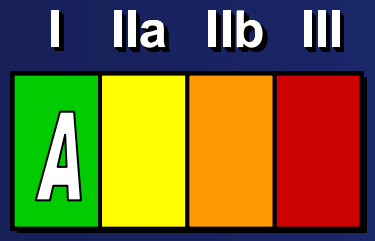
*Risk factors for cardiogenic shock (the greater the number of risk factors present, the higher the risk of developing cardiogenic shock): age greater than 70 years, systolic blood pressure less than 120 mmHg, sinus tachycardia greater than 110 or heart rate less than 60, increased time since onset of symptoms of UA/NSTEMI. Chen ZM, et al. *Lancet* 2005;366:1622–32.

Anti-Ischemic Therapy



Major Change

An ACE inhibitor should be administered orally within the first 24 h to UA/NSTEMI patients with pulmonary congestion or LV ejection fraction (LVEF) ≤ 40%, in the absence of hypotension (systolic blood pressure < 100 mm Hg or < 30 mm Hg below baseline) or known contraindications to that class of medications.

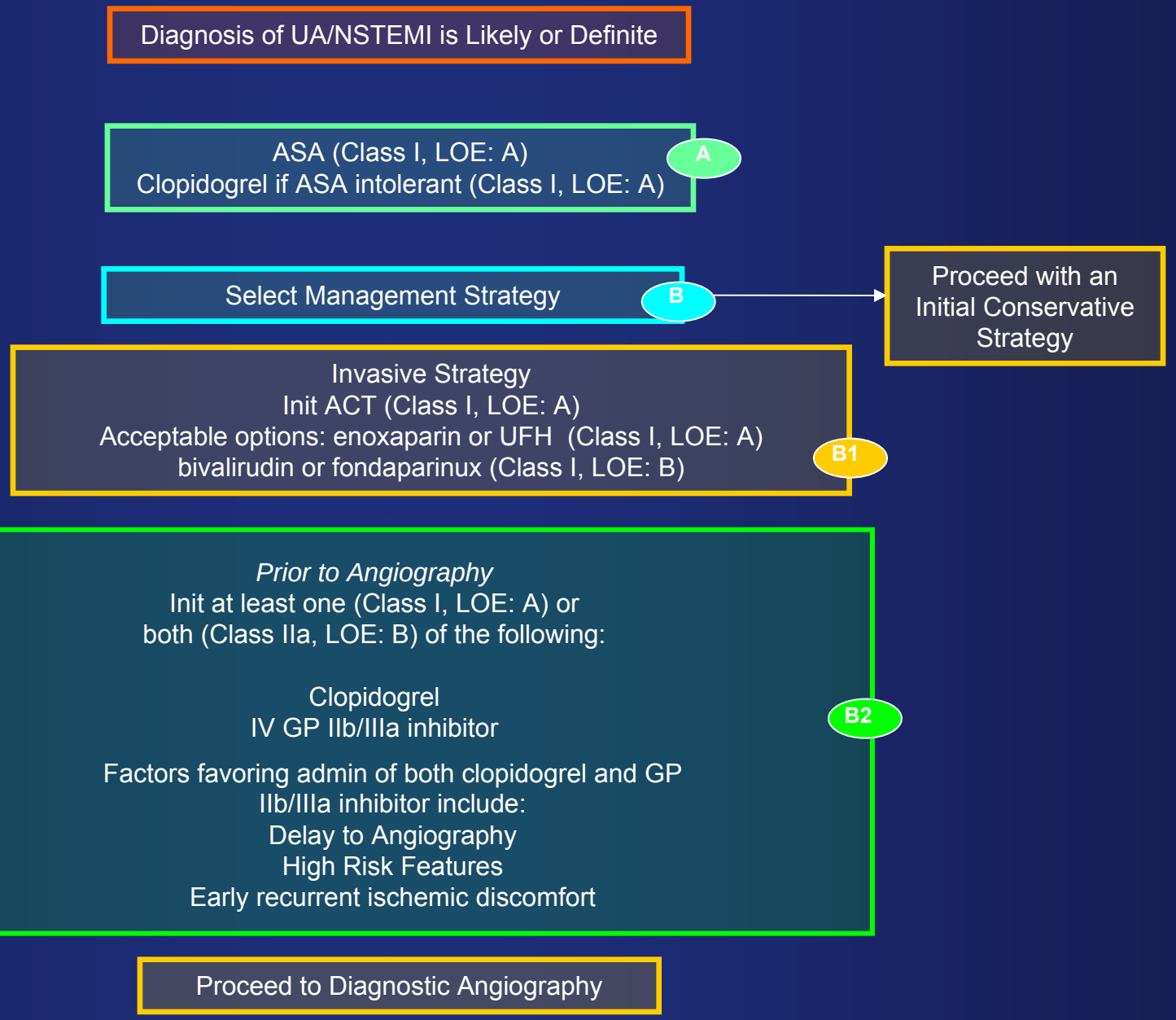


New

An angiotensin receptor blocker should be administered to UA/NSTEMI patients who are intolerant of ACE inhibitors and have either clinical or radiological signs of HF or LVEF ≤ 40%.

What is the initial anti-thrombotic therapy?

Algorithm for Patients with UA/NSTEMI Managed by an Initial Invasive Strategy



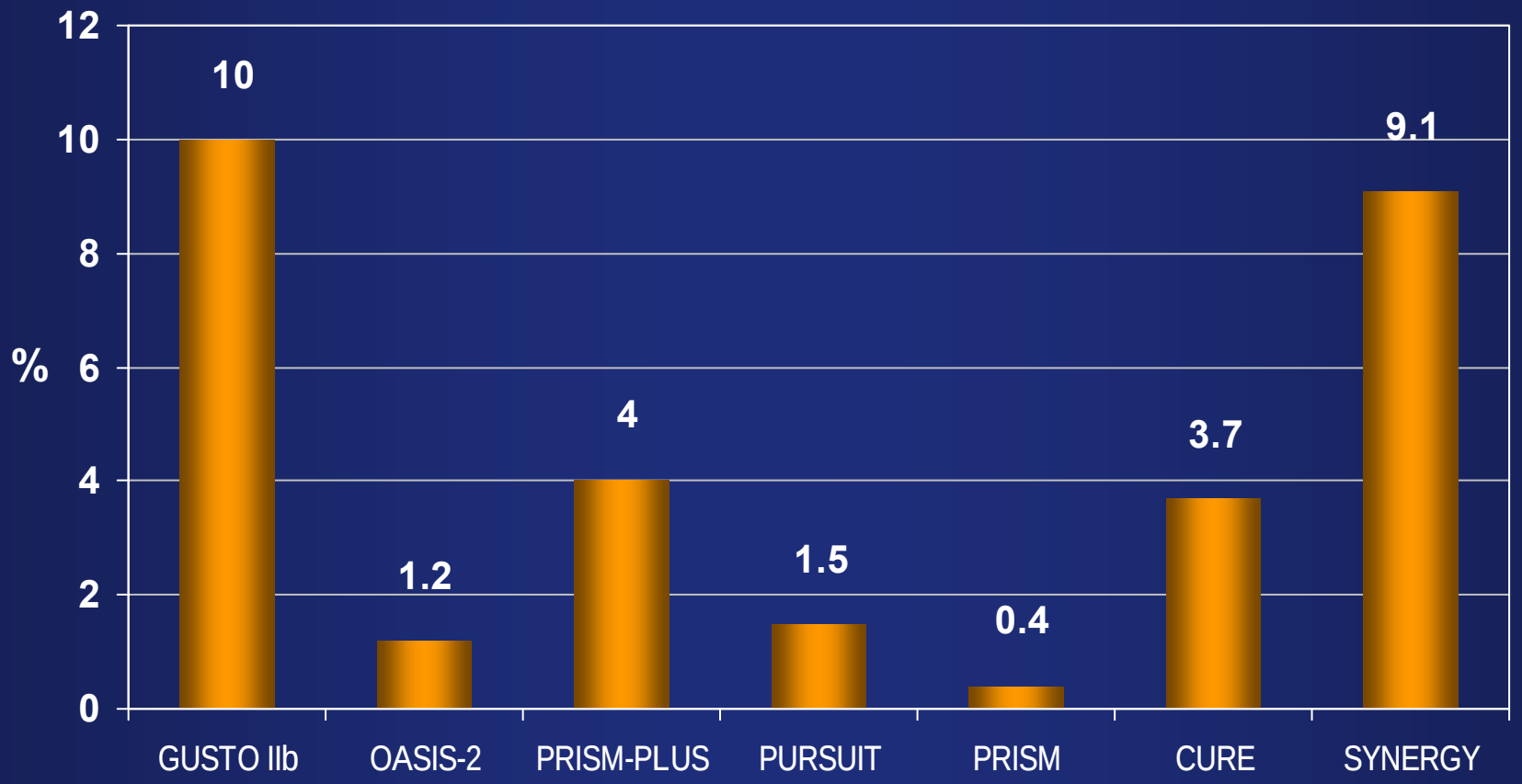
Anderson JL, et al. *J Am Coll Cardiol*. 2007;50:e1-e157, Figure 7. ACT = anticoagulation therapy; LOE = level of evidence.

Why is the selection of anti-thrombotic medications so important ?

What would you do with the same patient with a HB of 11.5 mg% ?

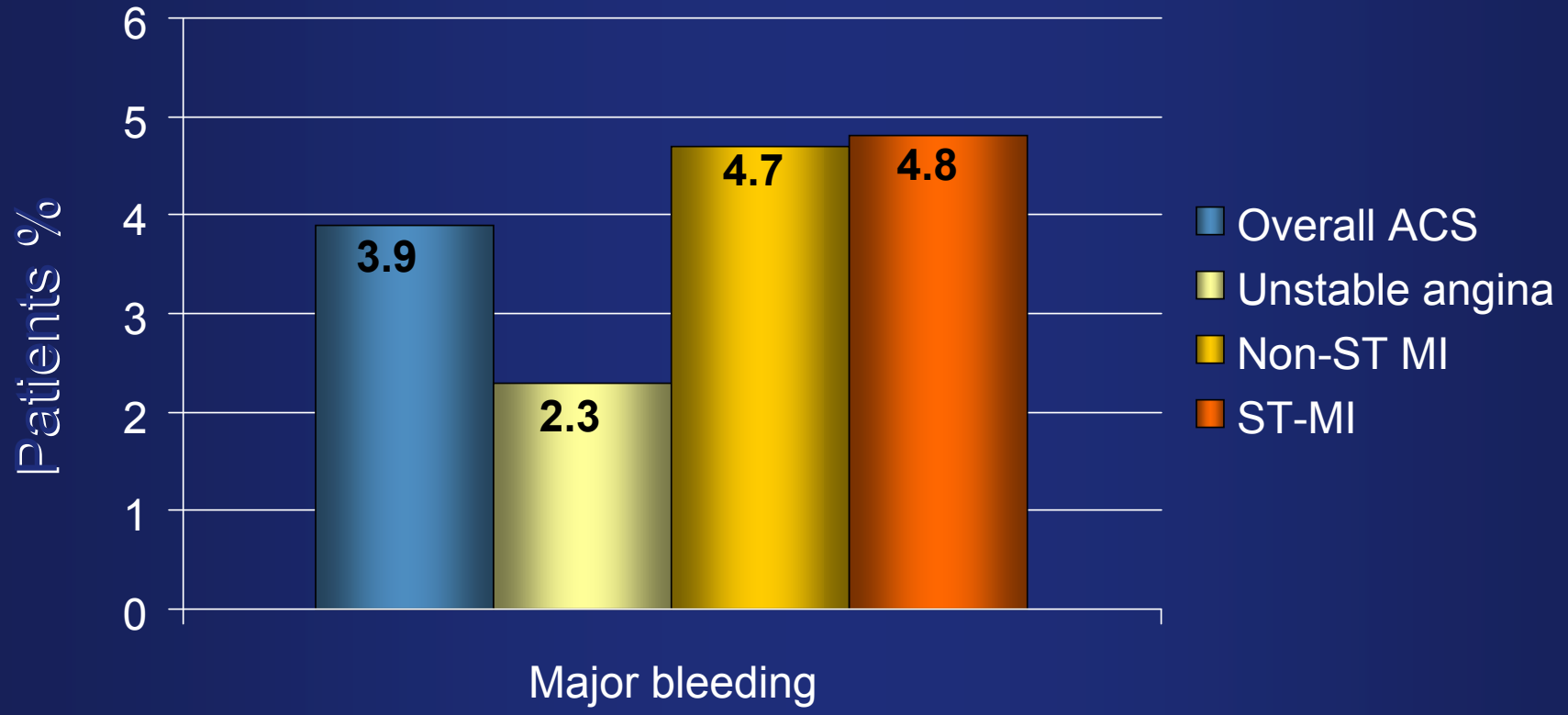
What would you do with an 80 year old patient with a HB of 11.5 mg% ?

Bleeding Incidence in ACS Clinical Trials



Rao SV, et al. *J Am Coll Cardiol*. 2006 Feb 21;47(4):809-16. Epub 2006 Jan 26

Major Bleeding in ACS: GRACE Registry



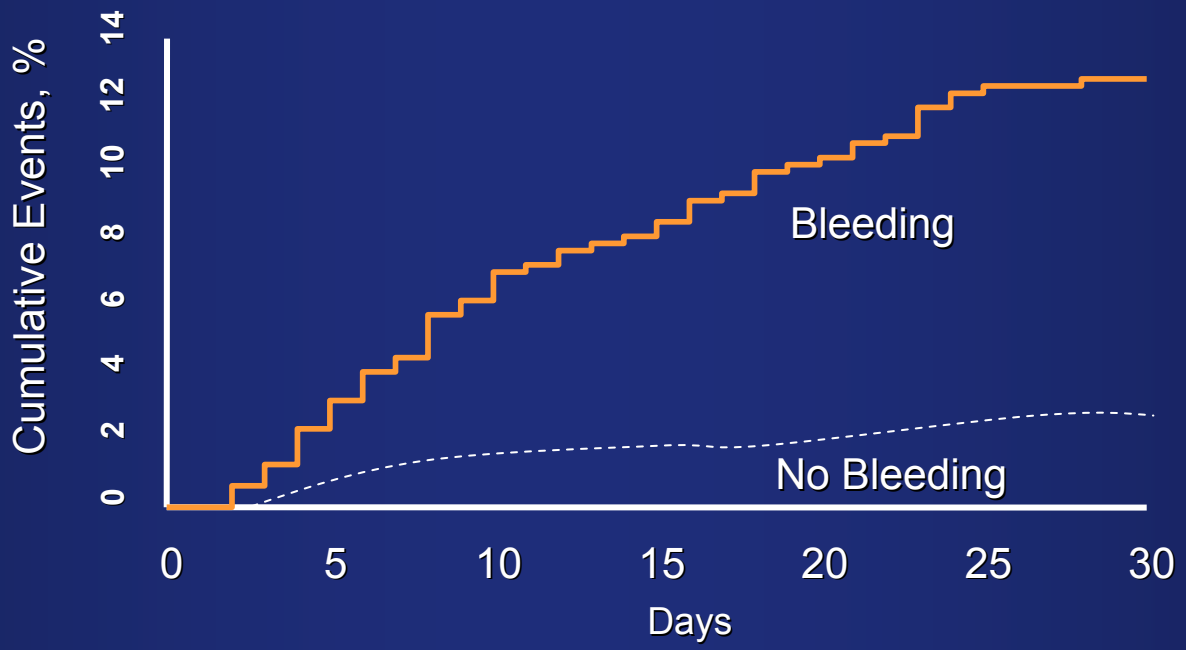
Definition of bleeding:

- Life threatening bleeding requiring a transfusion of 2+ units
- Bleeding resulting in an absolute decrease in hematocrit of ≥ 10%
- Bleeding resulting in death

n= 24,045 patients

European Heart Journal (2003) **24**, 1815–1823

30 Day Death According to Bleeding
OASIS Registry, OASIS-2, CURE



No. at Risk							
Bleeding	33676 470	33419 459	33157 440	32990 430	32879 420	32769 410	32710 408

J Eikelboom et al Circulation 2006

Bleeding in ACS

Question to be answered:

Are there certain ACS subpopulations at especially high risk for bleeding, transfusion, and morbidity/mortality?

Predictors of Major Bleeding in ACS

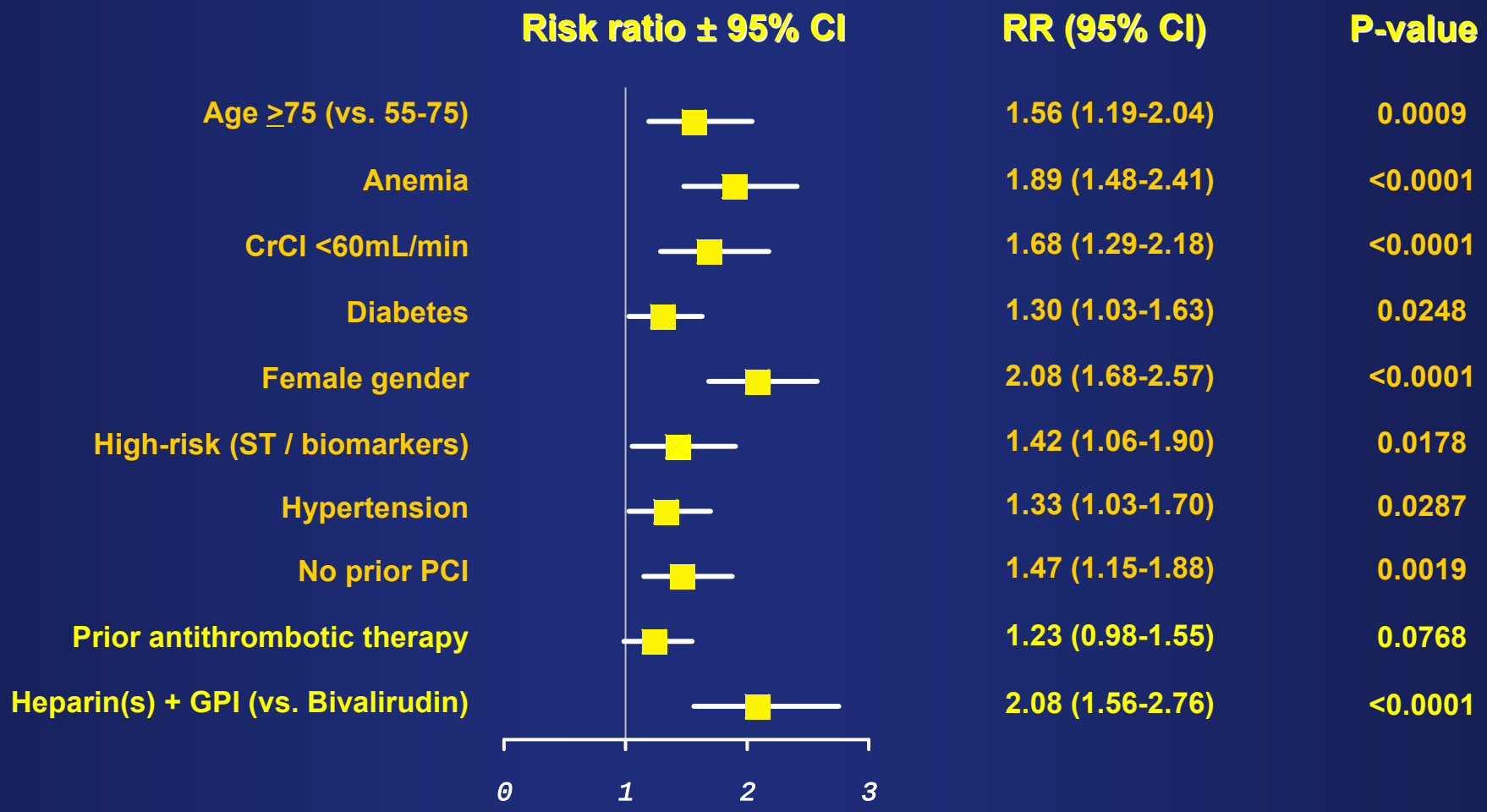
- Older Age
- Female Gender
- Renal Failure
- History of Bleeding
- GPIIb-IIIa antagonists

Independent Predictors of Major Bleeding in Marker Positive Acute Coronary Syndromes

Moscucci, GRACE Registry, *Eur Heart J*. 2003 Oct;24(20):1815-23.

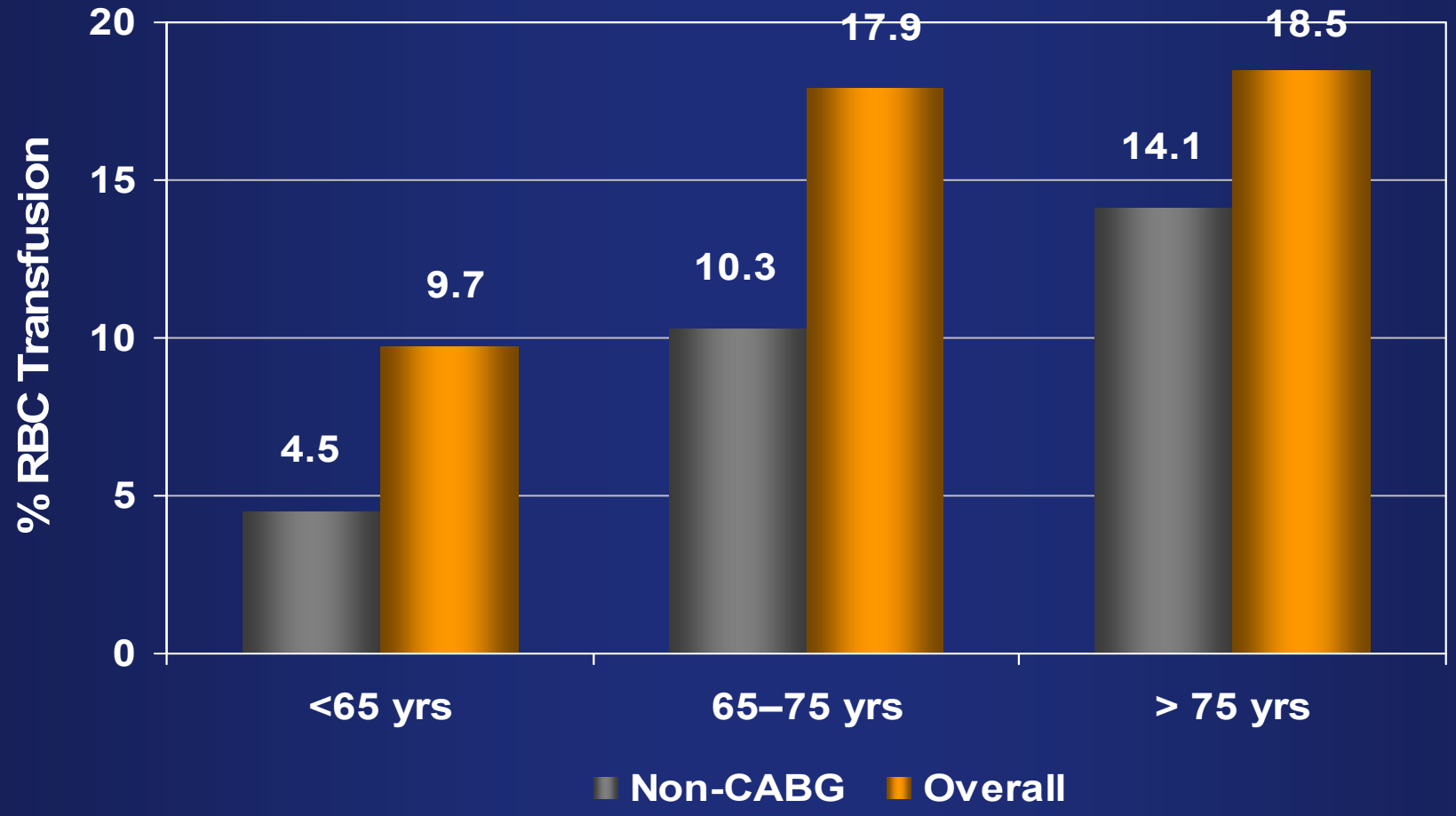
Predictors of Major Bleeding

Results: The ACUITY Trial PCI Population



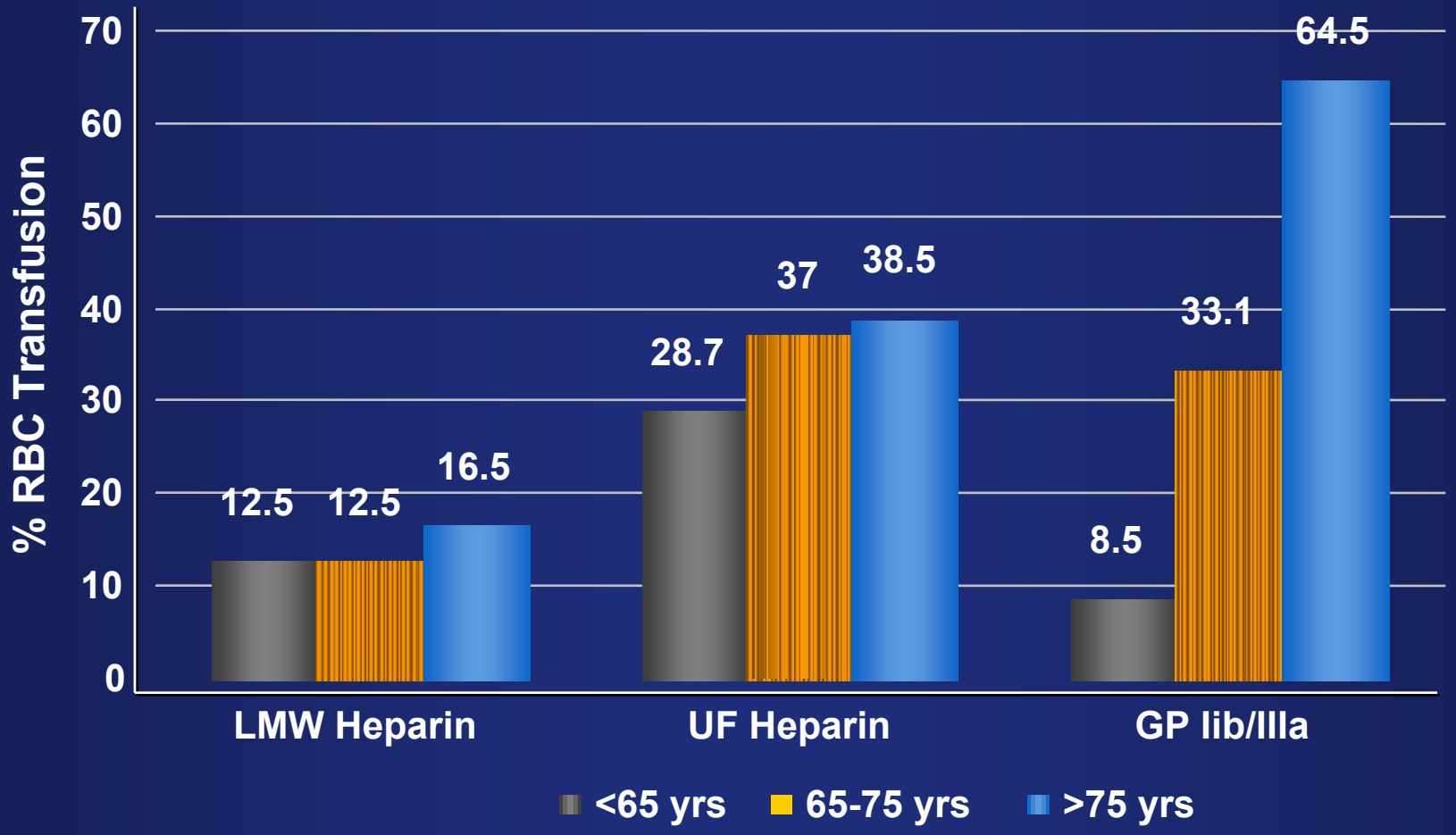
Manoukian SV, Voeltz MD, Feit F et al. TCT 2006.

Bleeding Risks—Transfusions by Age



Alexander KA, *JAMA* 2005;294:3108–16.

Excessive Dosing of Anticoagulants by Age



Alexander KA, *JAMA* 2005;294:3108–16.

A New Concept is Born

Bleeding carries a high risk of death, MI and stroke.

Rate of major bleeding is as high as the rate of death at the acute phase of NSTE-ACS.

Prevention of bleeding is equally as important as prevention of ischemic events and results in a significant risk reduction for death, MI and stroke.

Risk stratification for bleeding should be part of the decision making process.

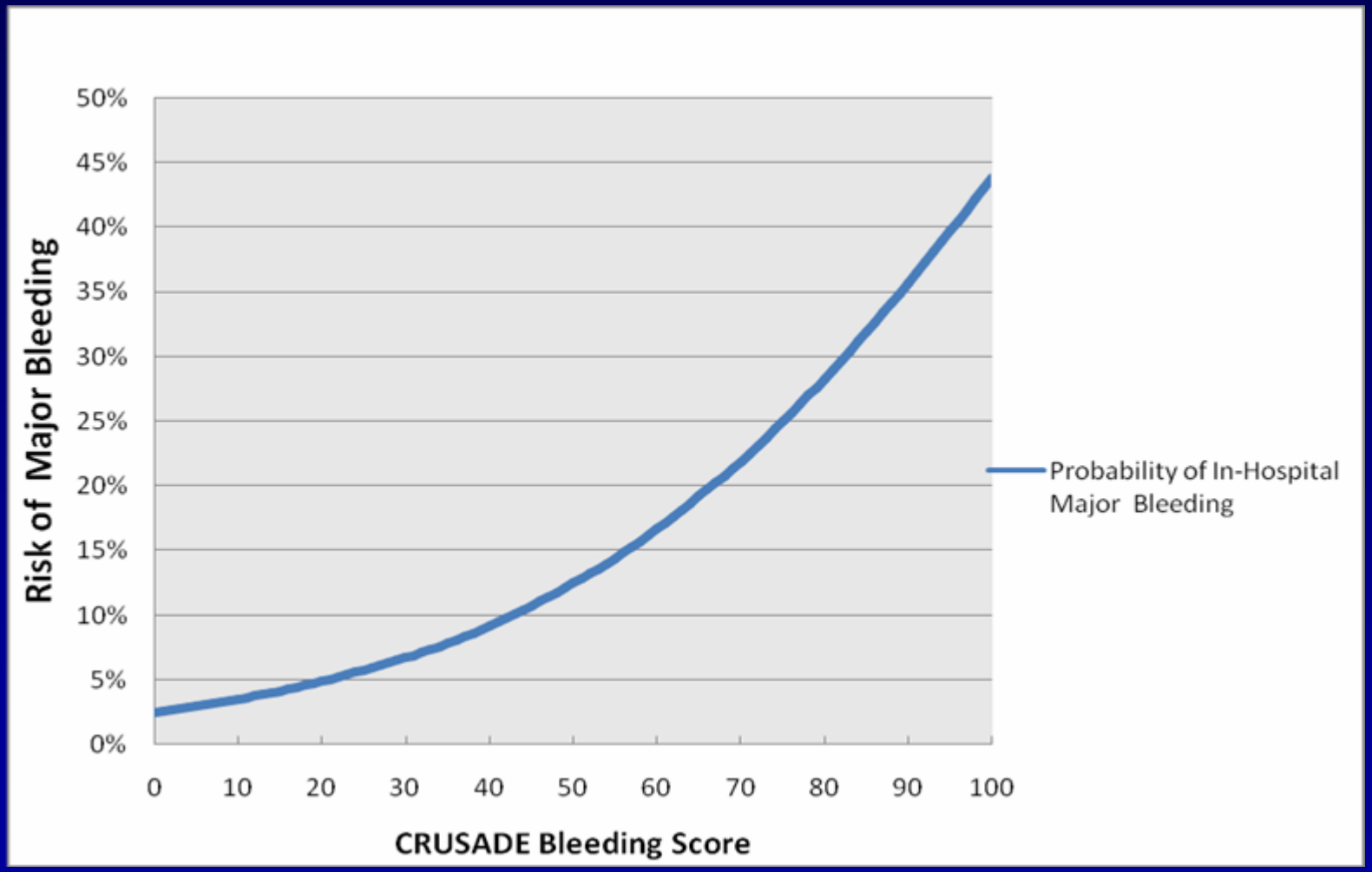
ESC Guidelines for the Management of NSTE-ACS

CRUSADE Bleeding Score Nomogram

Predictor	Range	Score
Baseline Hematocrit (%)	< 31	9
	31-33.9	7
	34-36.9	3
	37-39.9	2
	≥ 40	0
Creatinine Clearance (mL/min)	≤ 15	39
	>15-30	35
	>30-60	28
	>60-90	17
	>90-120	7
	>120	0
Heart rate (bpm)	≤ 70	0
	71-80	1
	81-90	3
	91-100	6
	101-110	8
	111-120	10
	≥ 121	11
Sex	Male	0
	Female	8
Signs of CHF at presentation	No	0
	Yes	7
Prior Vascular Disease	No	0
	Yes	6
Diabetes Mellitus	No	0
	Yes	6
Systolic blood pressure (mm Hg)	≤ 90	10
	91-100	8
	101-120	5
	121-180	1
	181-200	3
	≥ 201	5

Note: Heart rate is truncated @ <70 bpm;
CrCl: Cockcroft-Gault is truncated @ >90 mL/min; Prior Vascular disease is defined as prior PAD or stroke

Risk of Major Bleeding Across the Spectrum of CRUSADE Bleeding Score



p<0.001 for trend; Derivation: C=0.71 Validation: C=0.70

Risk Quintiles

- Patients were categorized into quintiles of risk groups based on their CRUSADE Bleeding Score

Risk	N	Min Score	Max Score	Bleeding
Very low	19,486	1	20	3.1%
Low	12,545	21	30	5.5%
Moderate	11,530	31	40	8.6%
High	10,961	41	50	11.9%
Very High	15,210	51	91	19.5%

Anti-thrombotic therapy

Aspirin = loading dose 160-325 mg

Aspirin maintenance - how much?

CURRENT Study Design, Flow and Compliance

25,087 ACS Patients (UA/NSTEMI 70.8%, STEMI 29.2%)

- ✓ Planned Early (<24 h) Invasive Management with **intended PCI**
- ✓ Ischemic ECG Δ (80.8%) or ↑cardiac biomarker (42%)

Randomized to receive (2 X 2 factorial):

CLOPIDOGREL: Double-dose (600 mg then150 mg/d x 7d then 75 mg/d) **vs Standard dose** (300 mg then 75 mg/d)

ASA: High Dose (300-325 mg/d) **vs Low dose** (75-100 mg/d)

Angio 24,769 (99%)

PCI 17,232 (70%)

No PCI 7,855 (30%)

- **No Sig. CAD 3,616**
- **CABG 1,809**
- **CAD 2,430**

Compliance:

Clop in 1st 7d (median)	**7d**	**7 d**	**2 d**	**7d**

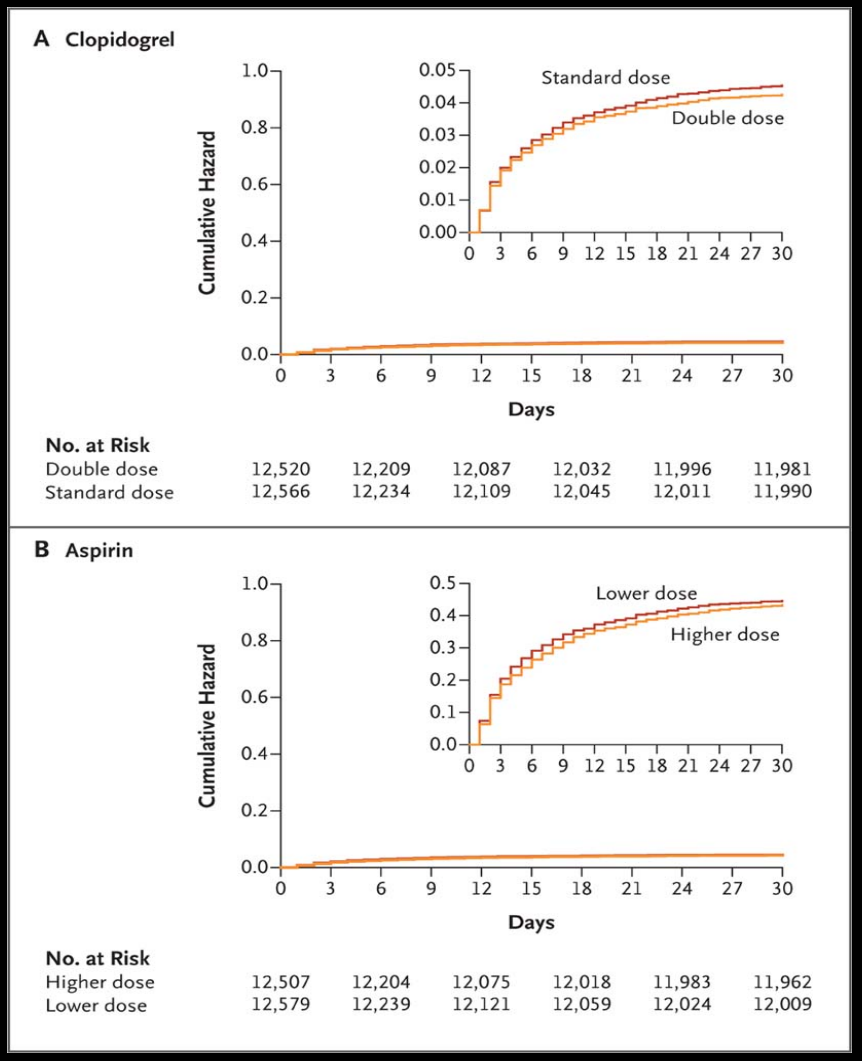
Efficacy Outcomes: CV Death, MI or stroke at day 30
Stent Thrombosis at day 30

Safety Outcomes: Bleeding (CURRENT defined Major/Severe and TIMI Major)

Key Subgroup: PCI v No PCI

Complete Followup 99.8%

Cumulative Hazard Ratios for the Primary Outcome at 30 Days, According to Treatment Group



The CURRENT–OASIS 7 Investigators. N Engl J Med 2010;363:930-942

The NEW ENGLAND JOURNAL of MEDICINE

Major Outcomes at 30 Days, According to Dose of Clopidogrel

Table 2. Major Outcomes at 30 Days, According to Dose of Clopidogrel.*

Outcome	Double Dose (N=12,520)	Standard Dose (N=12,566)	Hazard Ratio (95% CI)	P Value
	number (percent)			
Primary outcome: death from cardiovascular causes, myocardial infarction, or stroke	522 (4.2)	557 (4.4)	0.94 (0.83–1.06)	0.30
Secondary outcomes				
Death from cardiovascular causes, myocardial infarction, stroke, or recurrent ischemia	564 (4.5)	606 (4.8)	0.93 (0.83–1.05)	0.25
Death from cardiovascular causes	267 (2.1)	281 (2.2)	0.95 (0.81–1.13)	0.57
Myocardial infarction	237 (1.9)	277 (2.2)	0.86 (0.72–1.02)	0.09
Stroke	64 (0.5)	65 (0.5)	0.99 (0.70–1.40)	0.95
Recurrent ischemia	51 (0.4)	55 (0.4)	0.93 (0.64–1.36)	0.72
Death from any cause	287 (2.3)	300 (2.4)	0.96 (0.82–1.13)	0.61
Safety outcome: bleeding				
Major				
Study criteria	313 (2.5)	255 (2.0)	1.24 (1.05–1.46)	0.01
Requiring red-cell transfusion ≥2 units	267 (2.2)	210 (1.7)	1.28 (1.07–1.54)	0.01
CABG-related	123 (1.0)	114 (0.9)	1.09 (0.84–1.40)	0.53
Severe	236 (1.9)	195 (1.6)	1.22 (1.01–1.47)	0.04
Leading to decrease in hemoglobin level ≥5 g/dl	130 (1.0)	107 (0.9)	1.22 (0.95–1.58)	0.13
Symptomatic intracranial	4 (0.03)	6 (0.05)	0.67 (0.19–2.37)	0.53
Fatal	16 (0.1)	15 (0.1)	1.07 (0.53–2.16)	0.85
TIMI criteria	210 (1.7)	168 (1.3)	1.26 (1.03–1.54)	0.03
Minor	631 (5.1)	538 (4.3)	1.18 (1.05–1.33)	0.01

* The percentages are Kaplan–Meier estimates of the event rates at 30 days. CABG denotes coronary-artery bypass grafting, and TIMI Thrombolysis in Myocardial Infarction.

The CURRENT–OASIS 7 Investigators. N Engl J Med 2010;363:930-942

Major Outcomes at 30 Days, According to Dose of Aspirin

Table 3. Major Outcomes at 30 Days, According to Dose of Aspirin.*

Outcome	Higher Dose (N=12,507)	Lower Dose (N=12,579)	Hazard Ratio (95% CI)	P Value
	number (percent)			
Primary outcome: death from cardiovascular causes, myocardial infarction, or stroke	530 (4.2)	549 (4.4)	0.97 (0.86–1.09)	0.61
Secondary outcomes				
Death from cardiovascular causes, myocardial infarction, stroke, or recurrent ischemia	563 (4.5)	608 (4.8)	0.93 (0.83–1.04)	0.21
Death from cardiovascular causes	259 (2.1)	289 (2.3)	0.90 (0.76–1.06)	0.22
Myocardial infarction	253 (2.0)	261 (2.1)	0.97 (0.82–1.16)	0.76
Stroke	70 (0.6)	59 (0.5)	1.19 (0.84–1.68)	0.32
Recurrent ischemia	41 (0.3)	65 (0.5)	0.63 (0.43–0.94)	0.02
Death from any cause	273 (2.2)	314 (2.5)	0.87 (0.74–1.03)	0.10
Bleeding				
Major				
Study criteria	282 (2.3)	286 (2.3)	0.99 (0.84–1.17)	0.90
Requiring red-cell transfusion ≥2 units	239 (1.9)	238 (1.9)	1.01 (0.84–1.21)	0.93
CABG-related	111 (0.9)	126 (1.0)	0.88 (0.68–1.14)	0.34
Severe	216 (1.7)	215 (1.7)	1.01 (0.84–1.22)	0.93
Leading to decrease in hemoglobin level ≥5 g/dl	115 (0.9)	122 (1.0)	0.95 (0.73–1.22)	0.67
Symptomatic intracranial	6 (0.05)	4 (0.03)	1.51 (0.42–5.33)	0.53
Fatal	16 (0.1)	15 (0.1)	1.07 (0.53–2.17)	0.85
TIMI criteria	197 (1.6)	181 (1.4)	1.09 (0.89–1.34)	0.39
Minor	618 (5.0)	551 (4.4)	1.13 (1.00–1.27)	0.04

* The percentages are Kaplan–Meier estimates of the event rates at 30 days. CABG denotes coronary-artery bypass grafting, and TIMI Thrombolysis in Myocardial Infarction.

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Conclusions

- In patients with an acute coronary syndrome who were referred for an invasive strategy, there was no significant difference between a 7-day, double-dose clopidogrel regimen and the standard-dose regimen, or between higher-dose aspirin and lower-dose aspirin, with respect to the primary outcome of cardiovascular death, myocardial infarction, or stroke.

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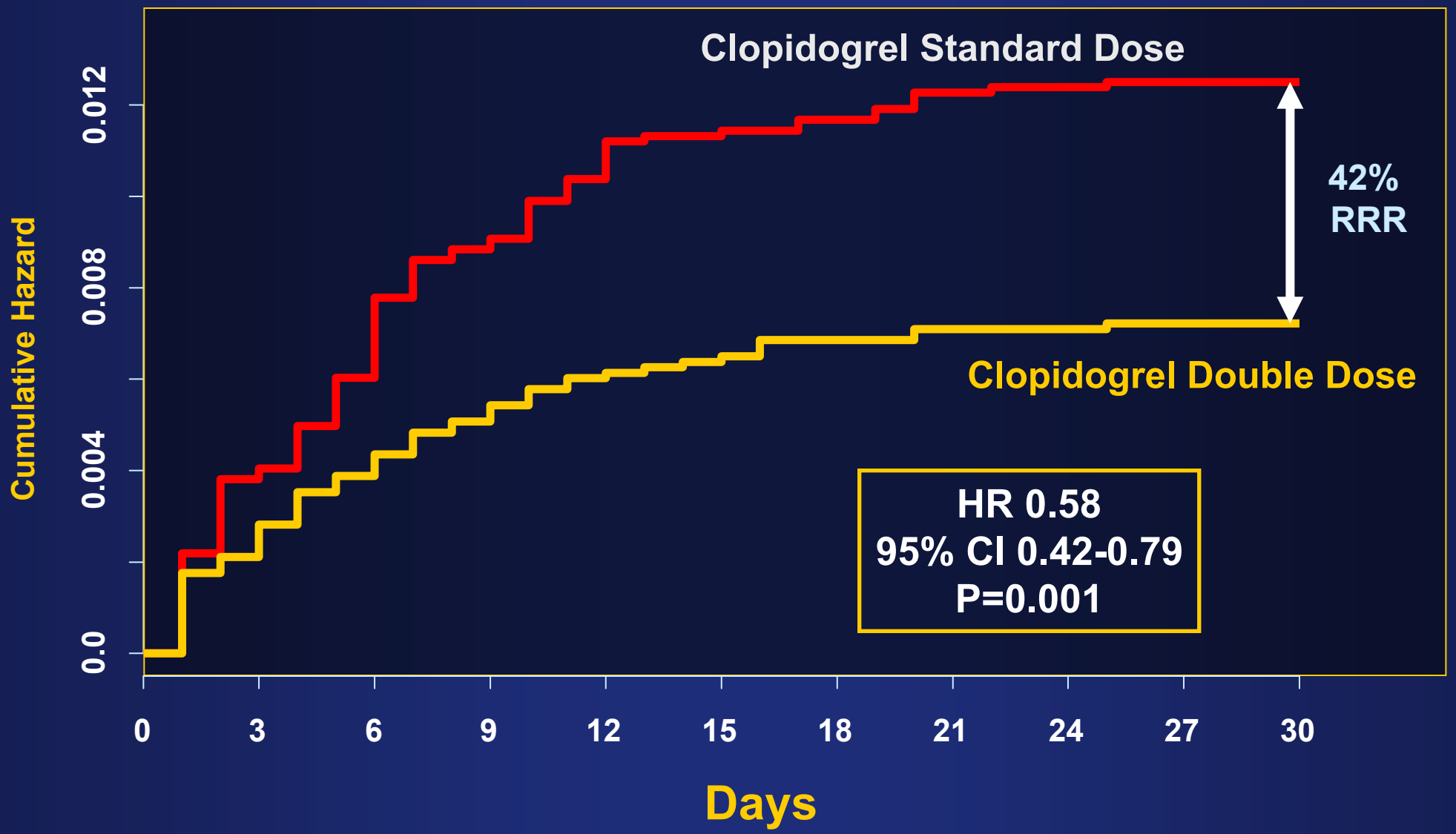
Clopidogrel

Loading dose – how much?

Maintenance – how much?

CURRENT

Clopidogrel: Double vs Standard Dose
Definite Stent Thrombosis (Angio confirmed)



ESC and ACC/AHA NSTE ACS Guidelines 2007

Anticoagulant Therapy for an Urgent Invasive Approach

	ESC	ACC/AHA
UFH	IC	IA
Enoxaparin	IIa-B	IA
Fondaparinux	Not recom-mended	IB
Bivalirudin	IB	IB

LMWH recommendation limited to enoxaparin.

Bassand JP, et al. *Eur Heart J.* 2007;28:1598-1660.

Anderson JL, et al. *Circulation.* 2007;116:e148-304.

Other Factors in Choosing Which Anticoagulant

Condition	UFH	LMWH	Fonda	Bival
Severe renal insuff.	caution	avoid	caution	caution
↑ bleeding risk	neutral	avoid	yes	yes
Thrombocytopenia	worst	less bad	better	best
Early cath strategy	yes	avoid	avoid	yes

Continue anticoagulant until (effective) revascularization or day 8/hospital discharge, whichever comes first

Granger, ESC 2007

Study Design: Randomized, Double Blind

Patients with NSTE ACS, Chest discomfort < 24 hours
2 of 3: Age>60, ST Segment Δ, ↑ cardiac markers

Exclude
Age < 21
Any contra-ind to Enox
Hem stroke< 12 mo.
Creat> 3 mg/dL/265 umol/L

ASA, Clop, GP IIb/IIIa, planned Cath/PCI as per local practice

Randomize

N=20,000

Fondaparinux 2.5 mg sc once daily

PCI <6 h: IV Fonda 2.5 mg without IIb/IIIa, 0 with IIb/IIIa
PCI> 6 h: IV Fonda 2.5 mg with and 5.0 mg without IIb/IIIa

Enoxaparin 1 mg/kg sc twice daily

PCI< 6 h, No additional UFH
PCI >6 h, IV UFH
With IIb/IIIa 65 U/kg
Without IIb/IIIa 100 U/kg

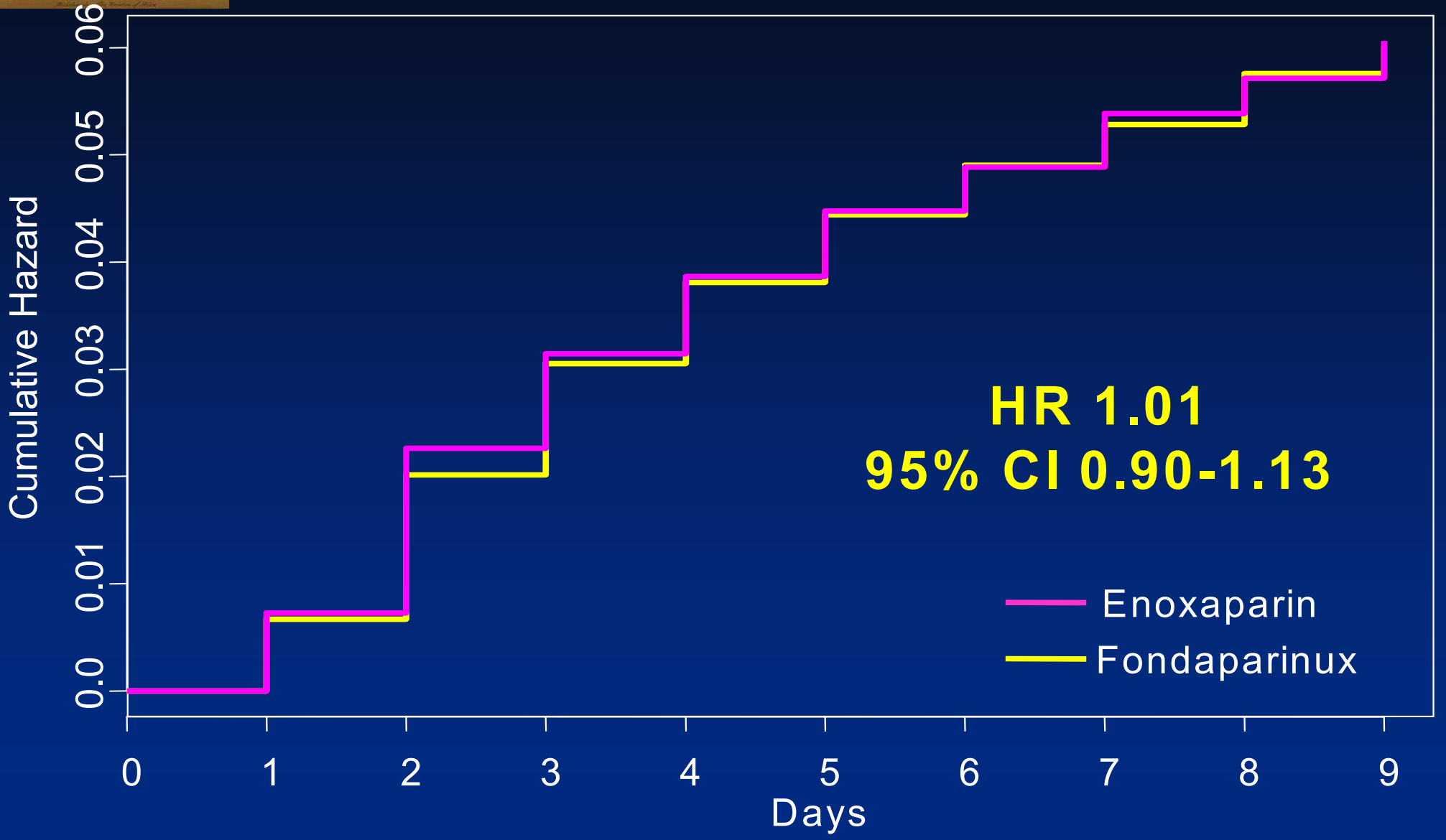
Outcomes

Primary: **Efficacy**: Death, MI, refractory ischemia at 9 days
Safety: Major bleeding at 9 days
Risk benefit: Death, MI, refractory ischemia, major bleeds 9 days

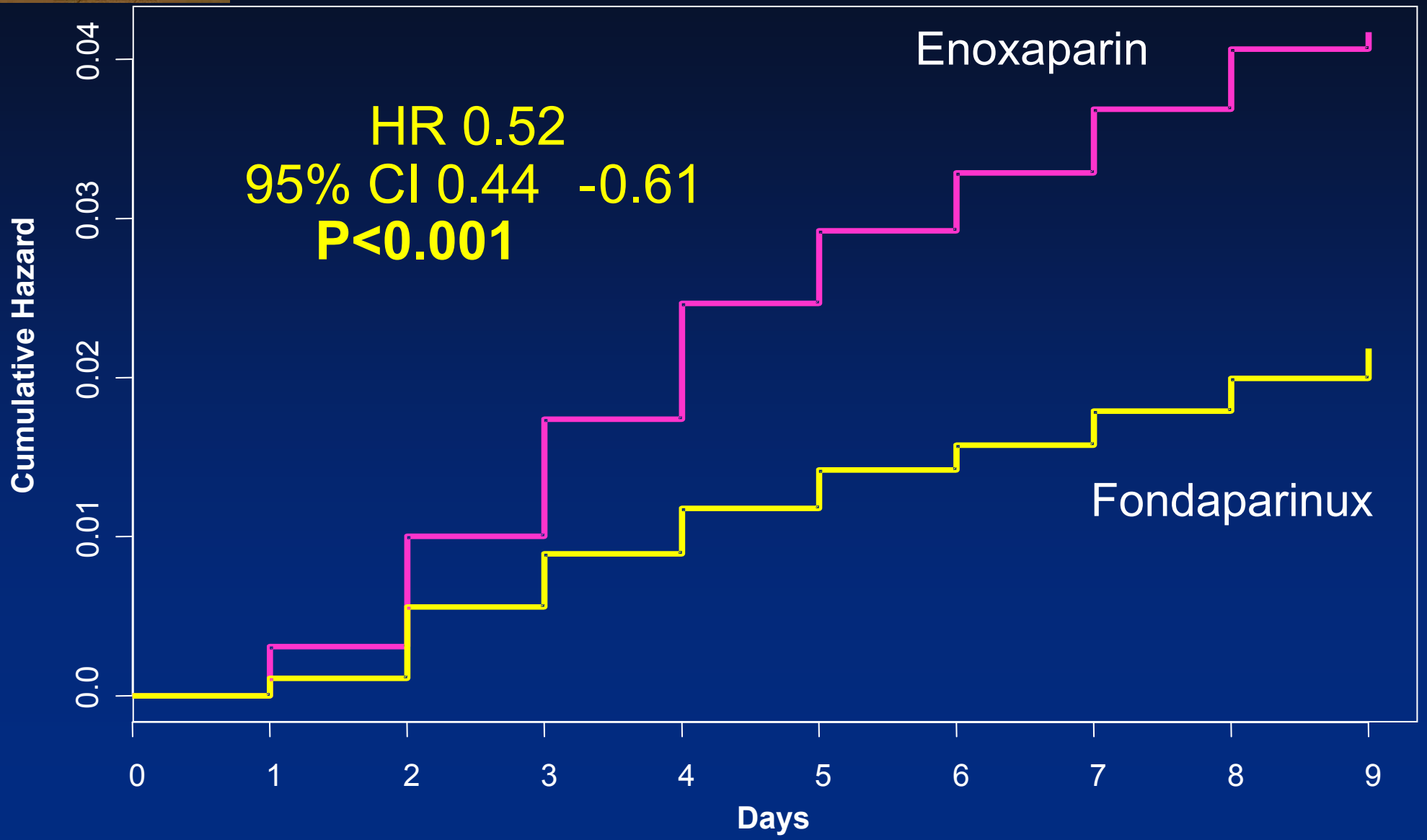
Secondary: Above & each component separately at day 30 & 6 months

Hypothesis: First test non-inferiority, then test superiority

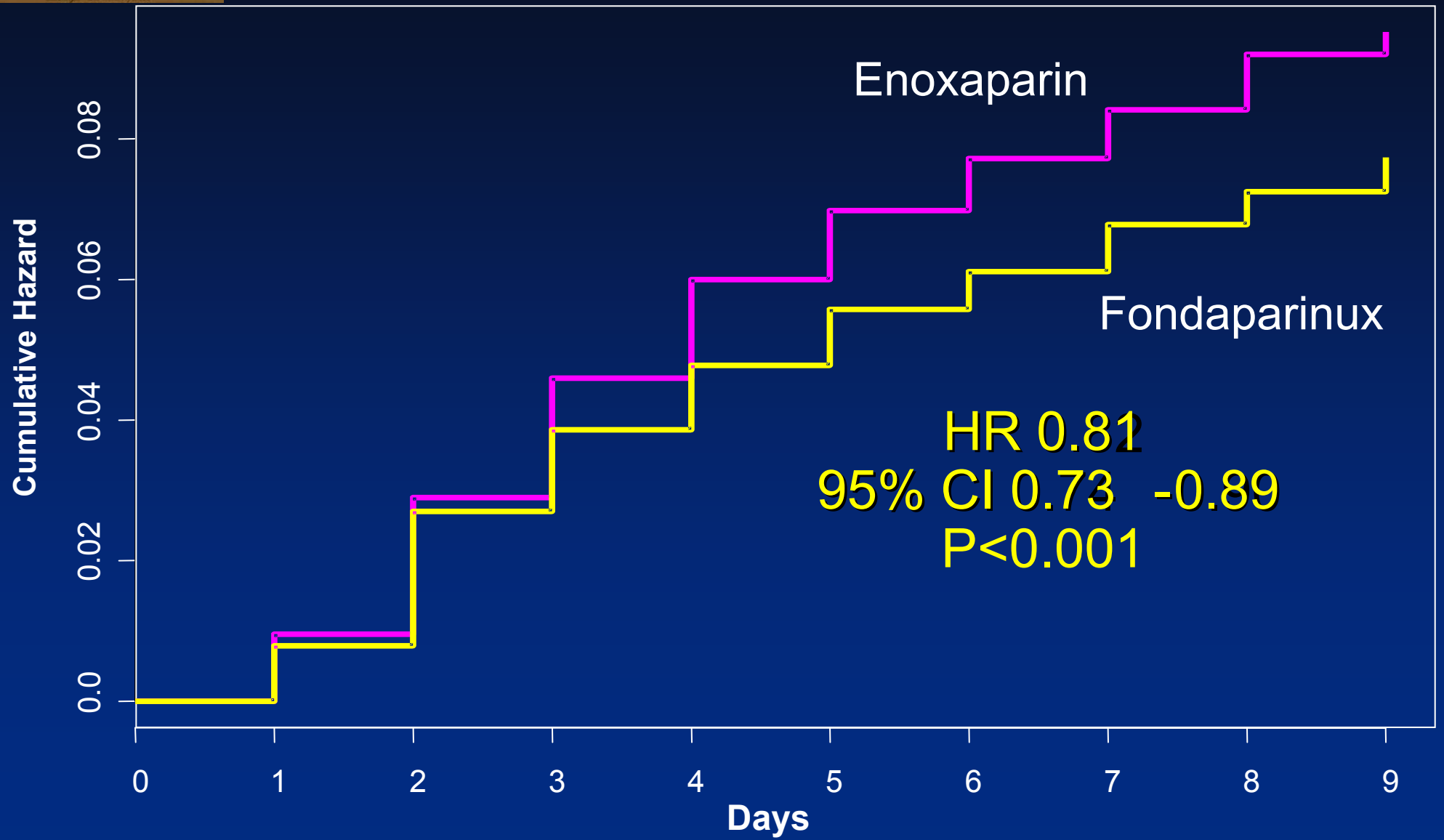
Death/MI/RI: Day 9



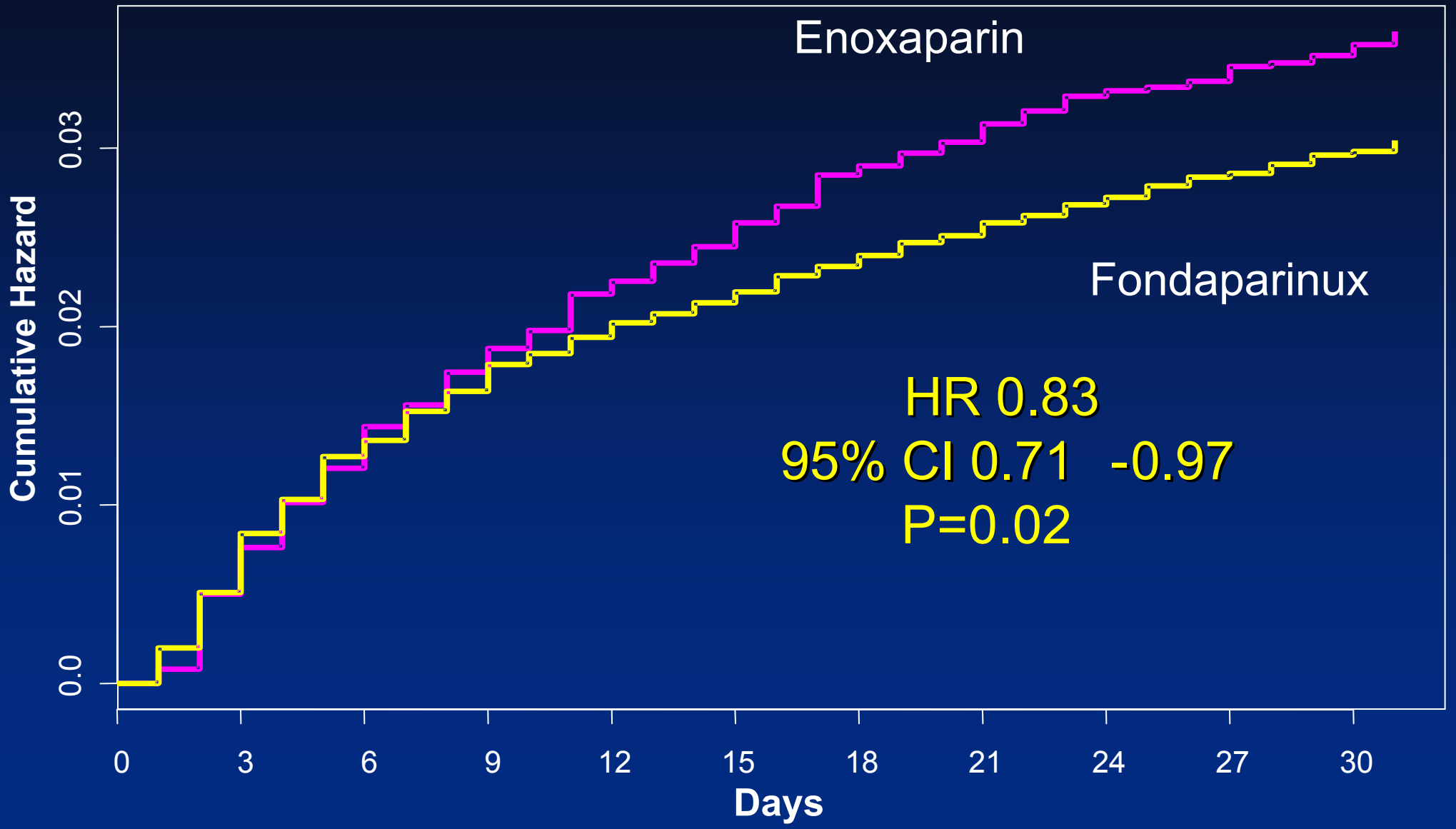
Major Bleeding: 9 Days



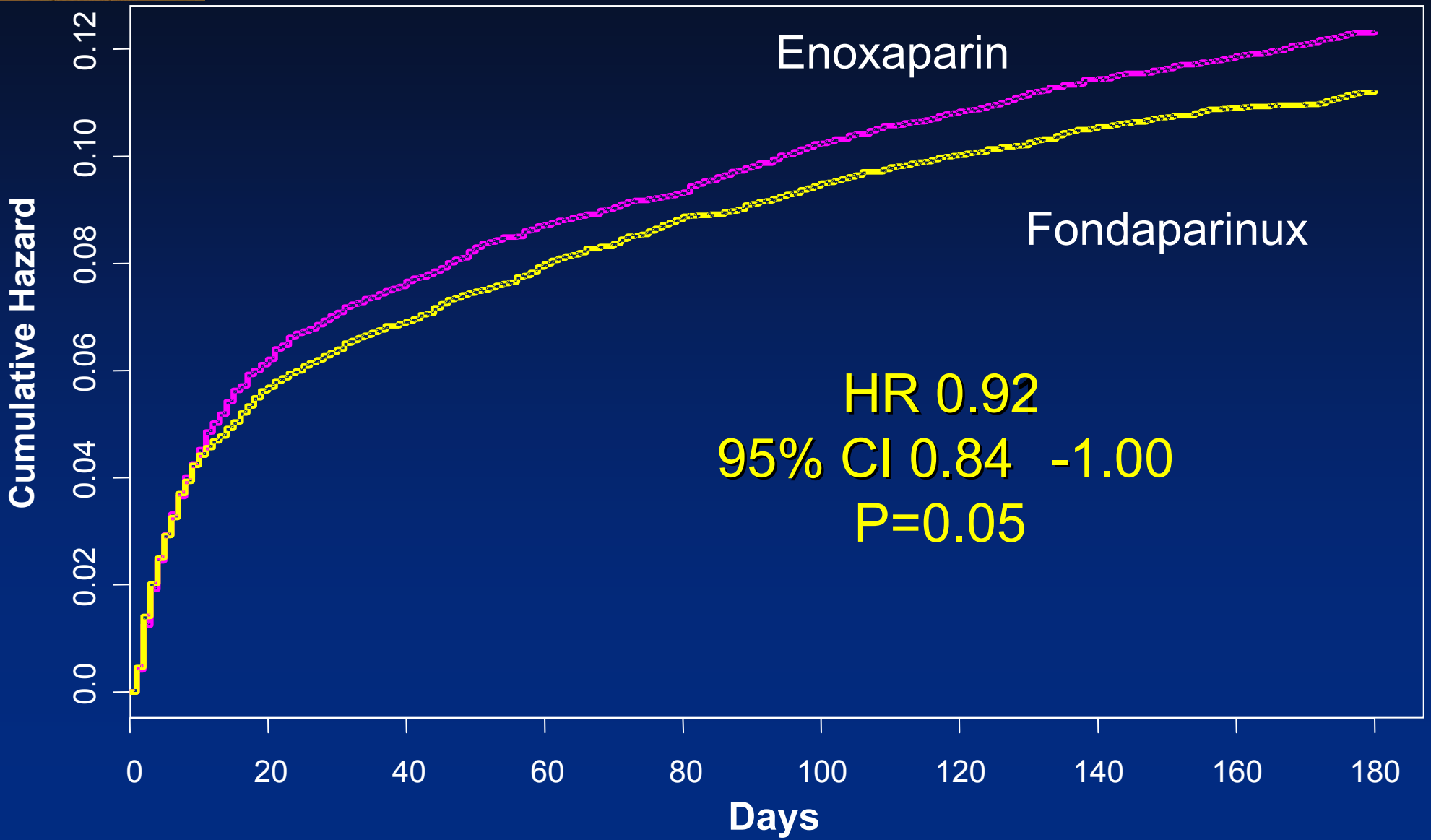
Efficacy -Safety Balance
Death/MI/RI/ Maj Bleed: Day 9



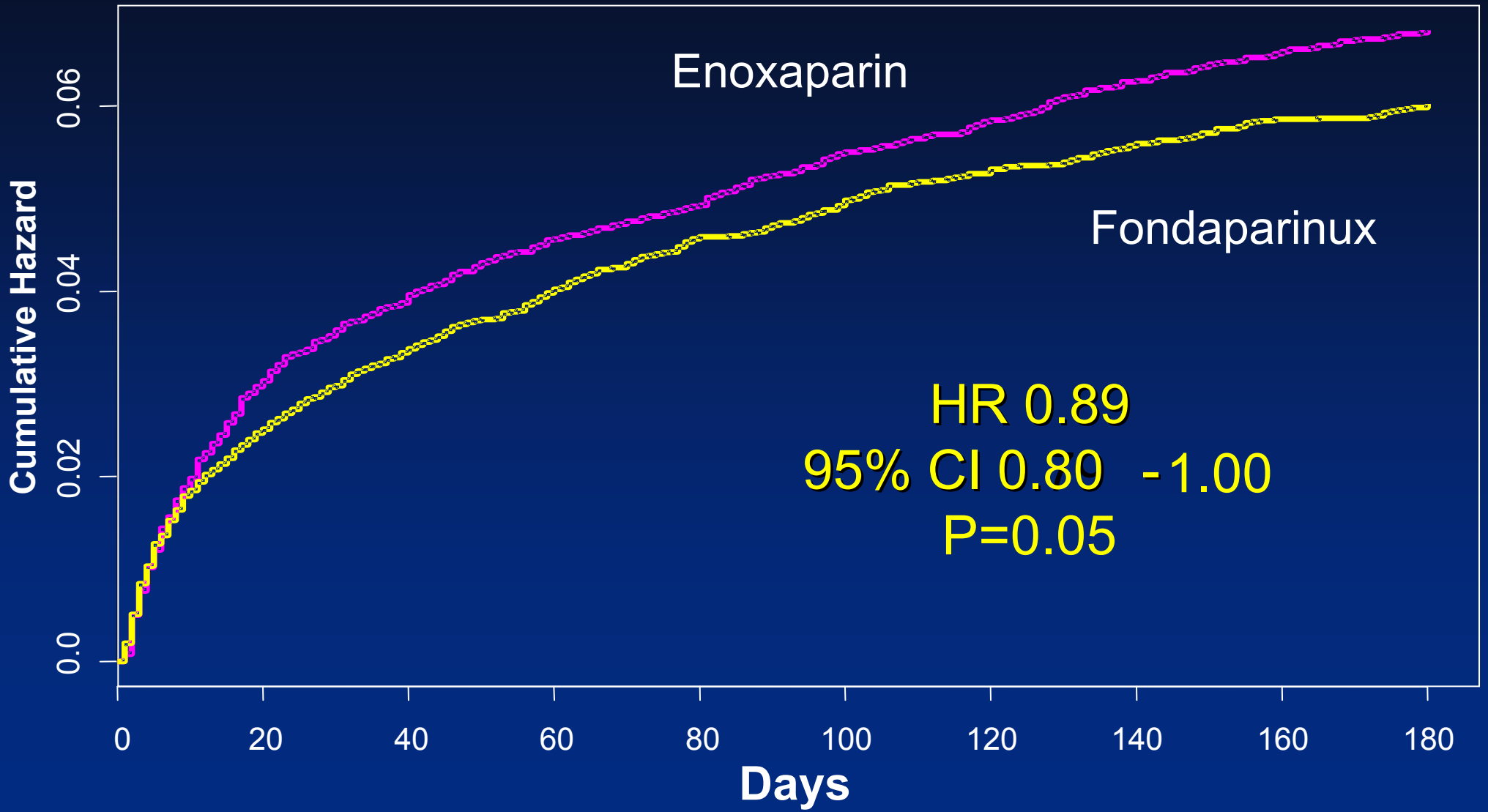
Mortality: Day 30



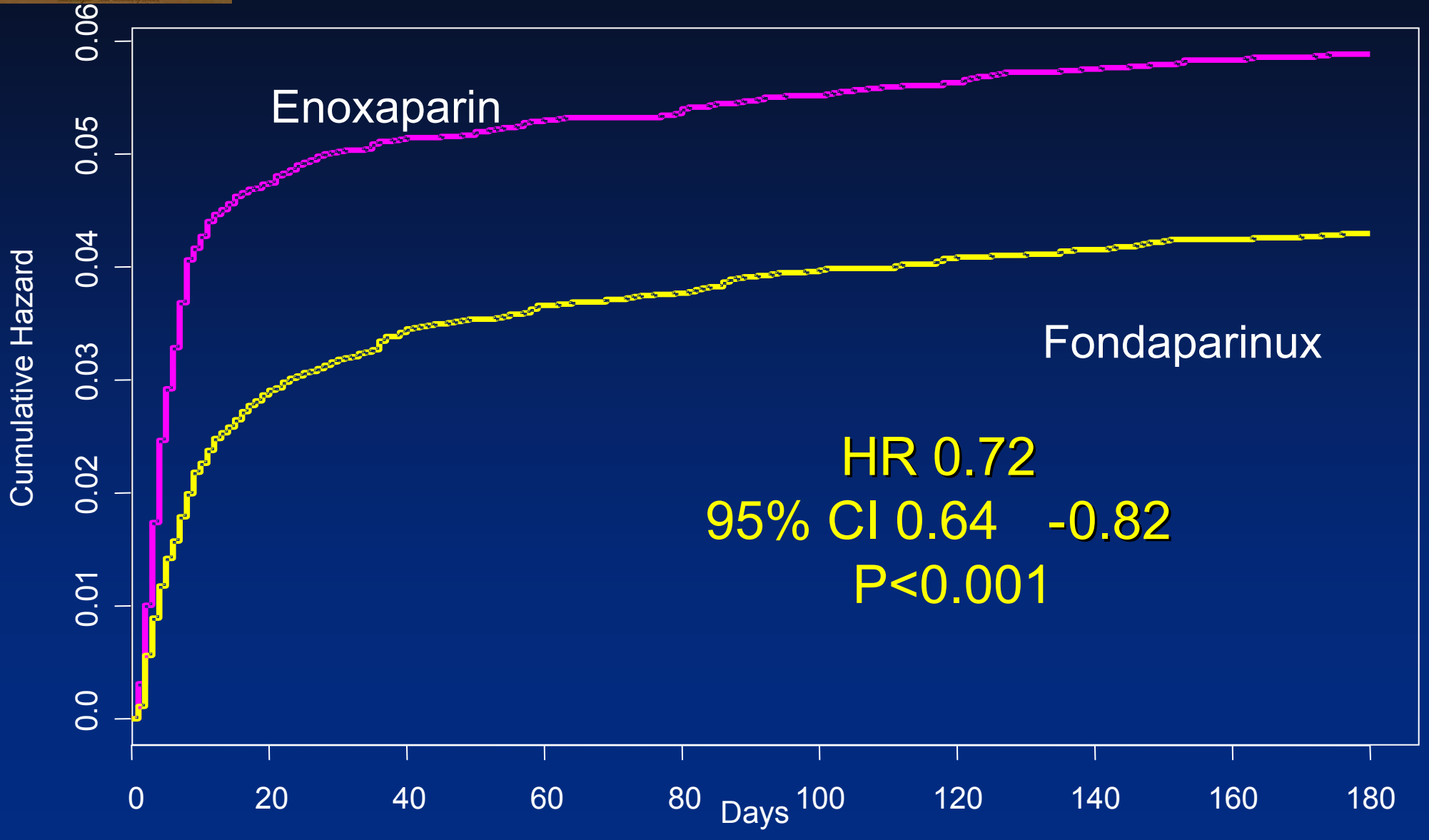
Death or MI: 6 Months



Mortality at 6 Months



Major Bleeding: 6 Months



The patient was given ASA, 600 mg Clopidogrel, and weight adjusted Enoxaparin BID.

The patient was given 80 mg Atorvastatin (MIRACLE, PROVE-IT, ARMYDA-ACS, ARMYDA-RECAPTURE).

What about up-stream GP IIb/IIIa ?

ISAR-REACT II

pts 2022
an episode of angina ≤ 48 hrs
angiographic lesions requiring PCI
: at least one of the following
- elevated troponin T level
- new ST-segment depression of ≥0.1 mV
- transient (<20 minutes) ST-segment elevation of ≥0.1 m V

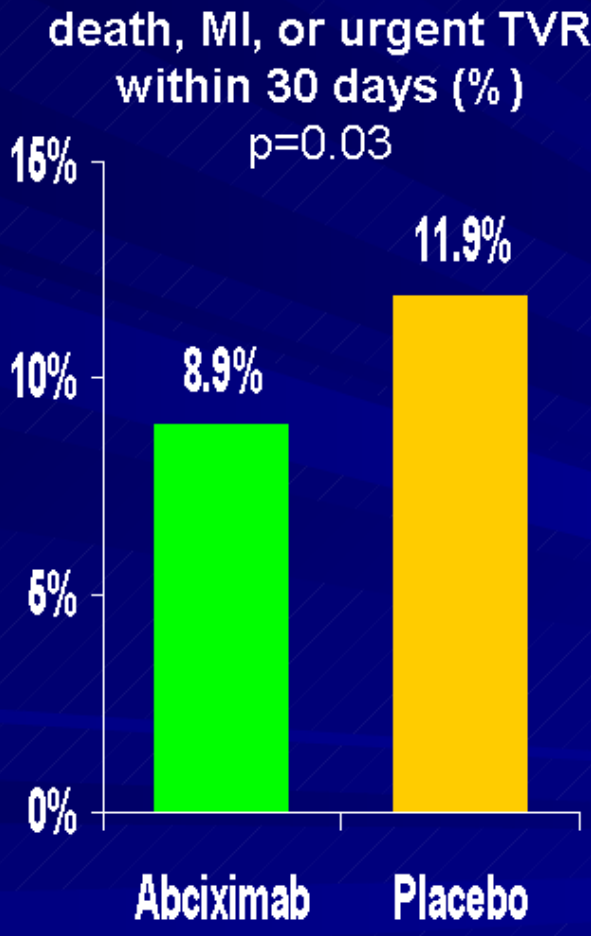
↓

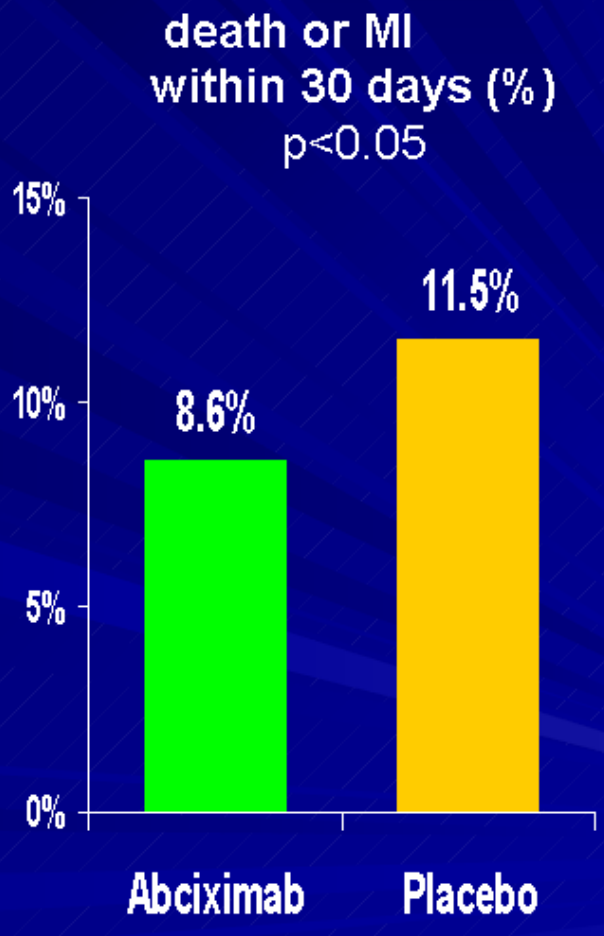
Pre-treatment with high dose (600mg) clopidogrel at least 2 hours pre-procedure

↙ ↘

Abciximab (n=1012	Placebo n=1010

ISAR-REACT 2 Trial : Endpoints





The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Early versus Delayed, Provisional Eptifibatide in Acute Coronary Syndromes

Robert P. Giugliano, M.D., S.M., Jennifer A. White, M.S., Christoph Bode, M.D., Paul W. Armstrong, M.D., Gilles Montalescot, M.D., Basil S. Lewis, M.D., Arnoud van 't Hof, M.D., Lisa G. Berdan, P.A., M.H.S., Kerry L. Lee, Ph.D., John T. Strony, M.D., Steven Hildemann, M.D., Enrico Veltri, M.D., Frans Van de Werf, M.D., Ph.D., Eugene Braunwald, M.D., Robert A. Harrington, M.D., Robert M. Califf, M.D., and L. Kristin Newby, M.D., M.H.S., for the EARLY ACS Investigators*

EARLY ACS

Study Design

2 of 3 high-risk criteria:
1. Age ≥ 60 years
2. + CKMB or TnT/I
3. ST ↓ or transient ST ↑

(Or age 50-59, h/o CVD and + CKMB or TnT/I)

High-risk NSTE ACS
n = 10,500

Routine, early eptifibatide
(180/2/180)

Placebo / delayed provisional eptifibatide pre-PCI

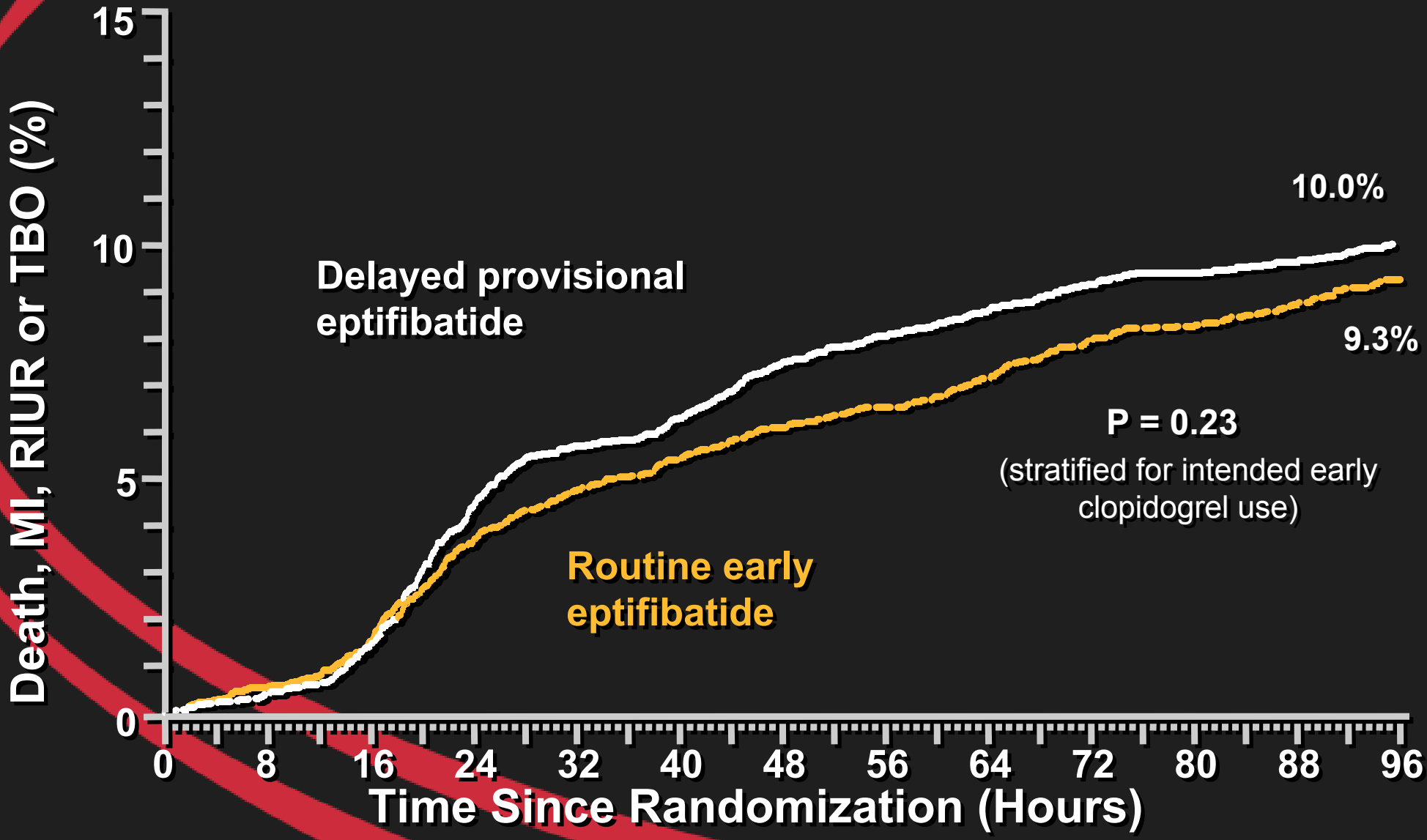
Randomize within 12 hours of presentation

Invasive strategy: 12 to 96 hours after randomization

Safety Endpoints at 120 hrs: Bleeding (GUSTO and TIMI scales), Transfusions, Stroke, Non-hemorrhagic SAEs

EARLY ACS

Kaplan-Meier Curves for Primary Endpoint



EARLY ACS

Safety Results (through 120 hours)

	Routine Early Eptifibatide (n=4686)	Delayed Provisional Eptifibatide (n=4643)	OR (95% CI)	P
Bleeding (all patients, %)				
TIMI major	2.6	1.8	1.42 (1.07-1.89)	0.015
TIMI major or minor	5.8	3.4	1.75 (1.43-2.14)	<0.001
GUSTO severe	0.8	0.9	0.99 (0.64-1.55)	0.97
GUSTO moderate or severe	7.6	5.1	1.52 (1.28-1.80)	<0.001
PRBC transfusion	8.6	6.7	1.31 (1.12-1.53)	0.001
Bleeding (CABG)				
Re-operation for bleeding (%)	6.0	8.4	0.70 (0.39-1.27)	0.24
Chest tube output (mL/24 H)	720	770	--	0.41
Thrombocytopenia (<100K, %)	3.3	2.8	1.19 (0.93-1.51)	0.17
Stroke (total, %)	0.6	0.8	0.79 (0.48-1.30)	0.36

Selection of Initial Treatment Strategy: Initial Invasive Versus Conservative Strategy

Invasive	Recurrent angina/ischemia at rest with low-level activities despite intensive medical therapy
	Elevated cardiac biomarkers (TnT or TnI)
	New/presumably new ST-segment depression
	Signs/symptoms of heart failure or new/worsening mitral regurgitation
	High-risk findings from noninvasive testing
	Hemodynamic instability
	Sustained ventricular tachycardia
	PCI within 6 months
	Prior CABG
	High risk score (e.g., TIMI, GRACE)
	Reduced left ventricular function (LVEF < 40%)
Conservative	Low risk score (e.g., TIMI, GRACE)
	Patient/physician presence in the absence of high-risk features

When would you send him to cath?

Immediately?

On the next day?

Within 2-5 days?

Time to catheterization (hrs)

	EARLY	LATE
FRISC 2 (1999)	96	408
TRUCS (2000)	48	120
TIMI-18 (2001)	22	79
VINO (2002)	6	1464
RITA 3 (2002)	48	1020
ELISA (2003)	6	50
ISAR-COOL (2003)	3	86
ICTUS (2005)	23	283
TIME-ACS (2008)	14	50
ABOARD (2009)	**Immediate**	**Next morning**

Preliminary Results

ABOARD

Angioplasty to Blunt the rise Of troponin in Acute coronary syndromes Randomized for an immediate or Delayed intervention

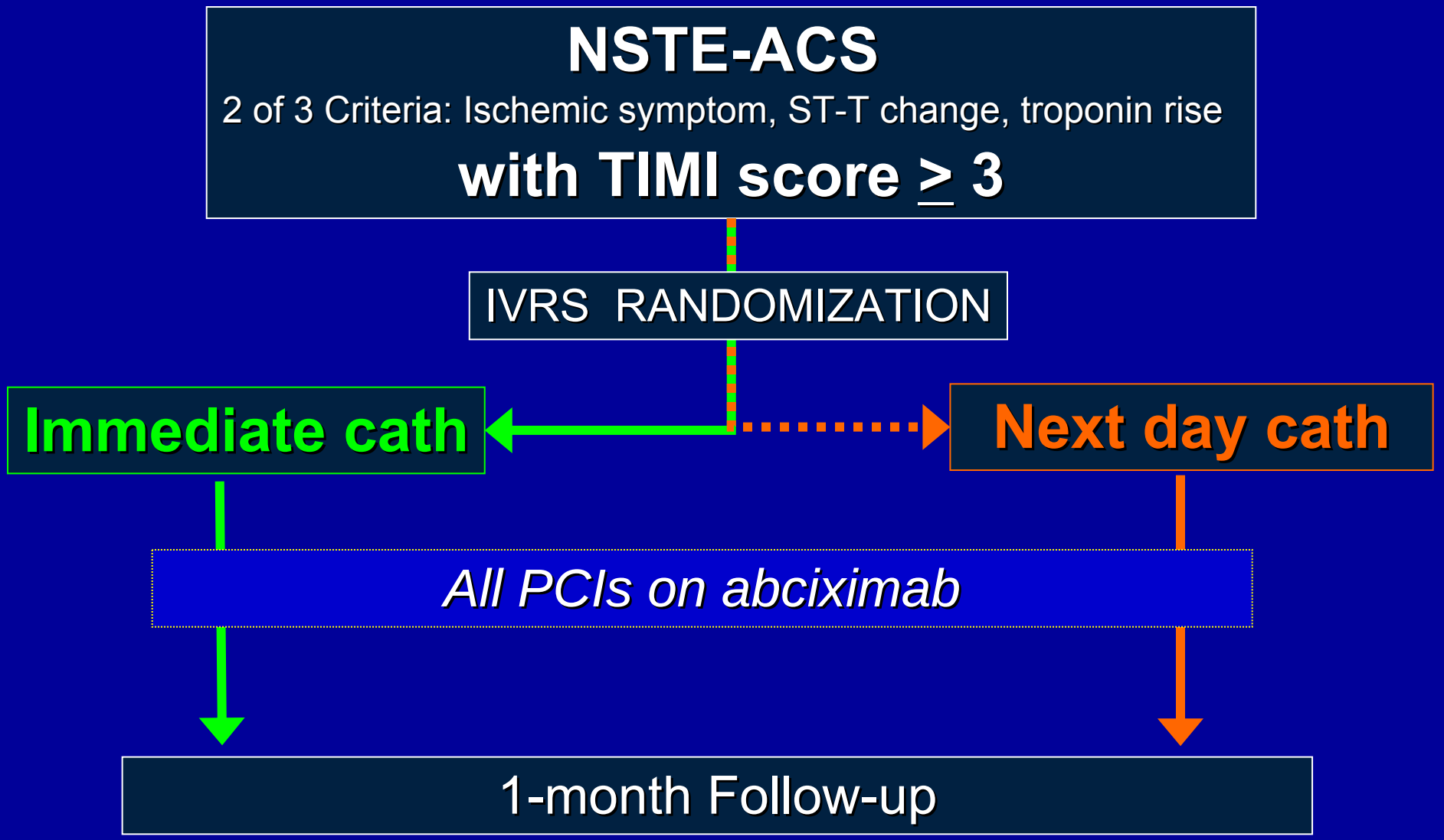
A Multicenter Randomized Trial of Immediate Versus Delayed Invasive Strategy in Patients with Non-ST Elevation ACS

G. Montalescot, on behalf of the *ABOARD* investigators

JAMA. 2009;302(9):947-954

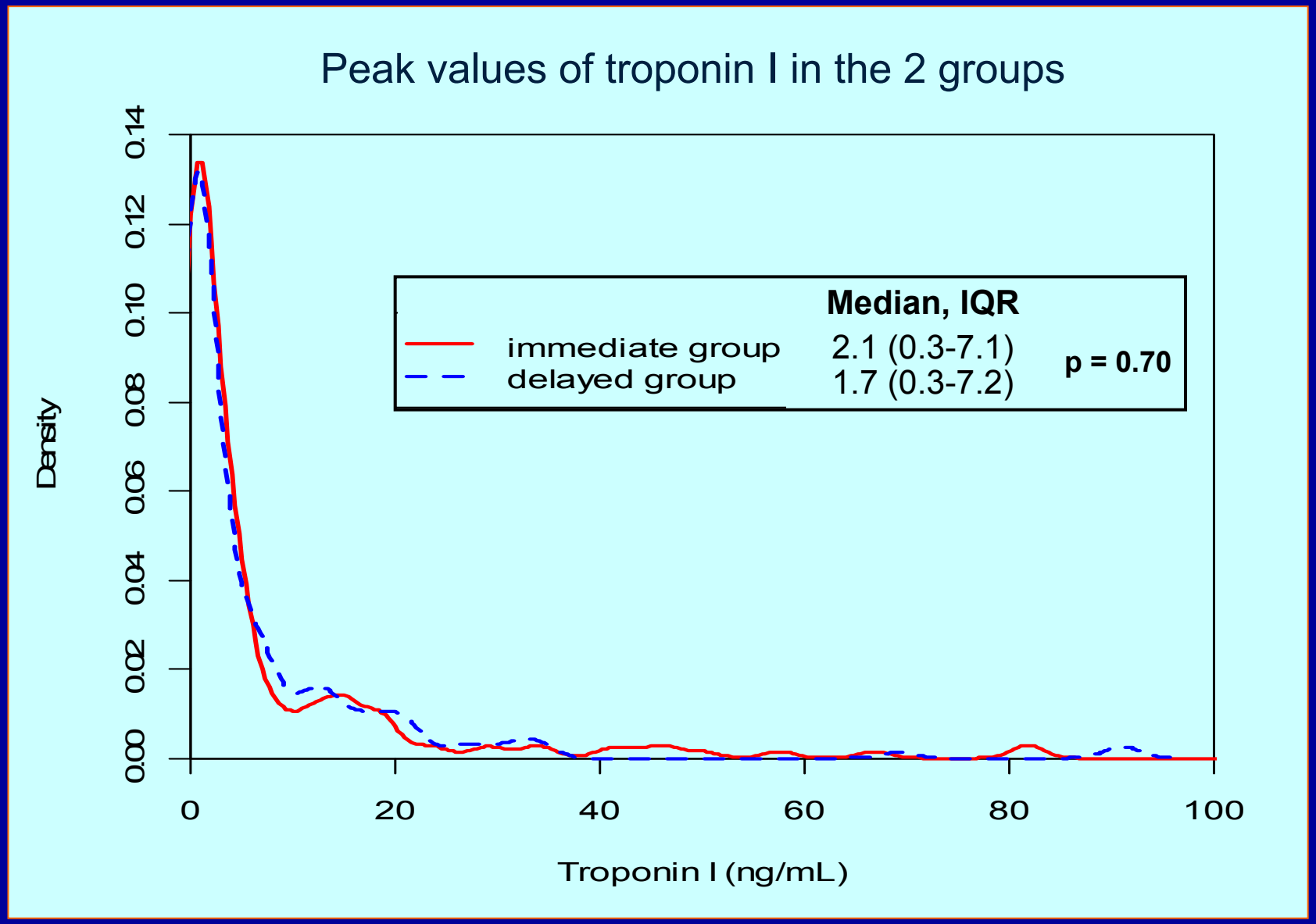
Preliminary Results

ABOARD study design



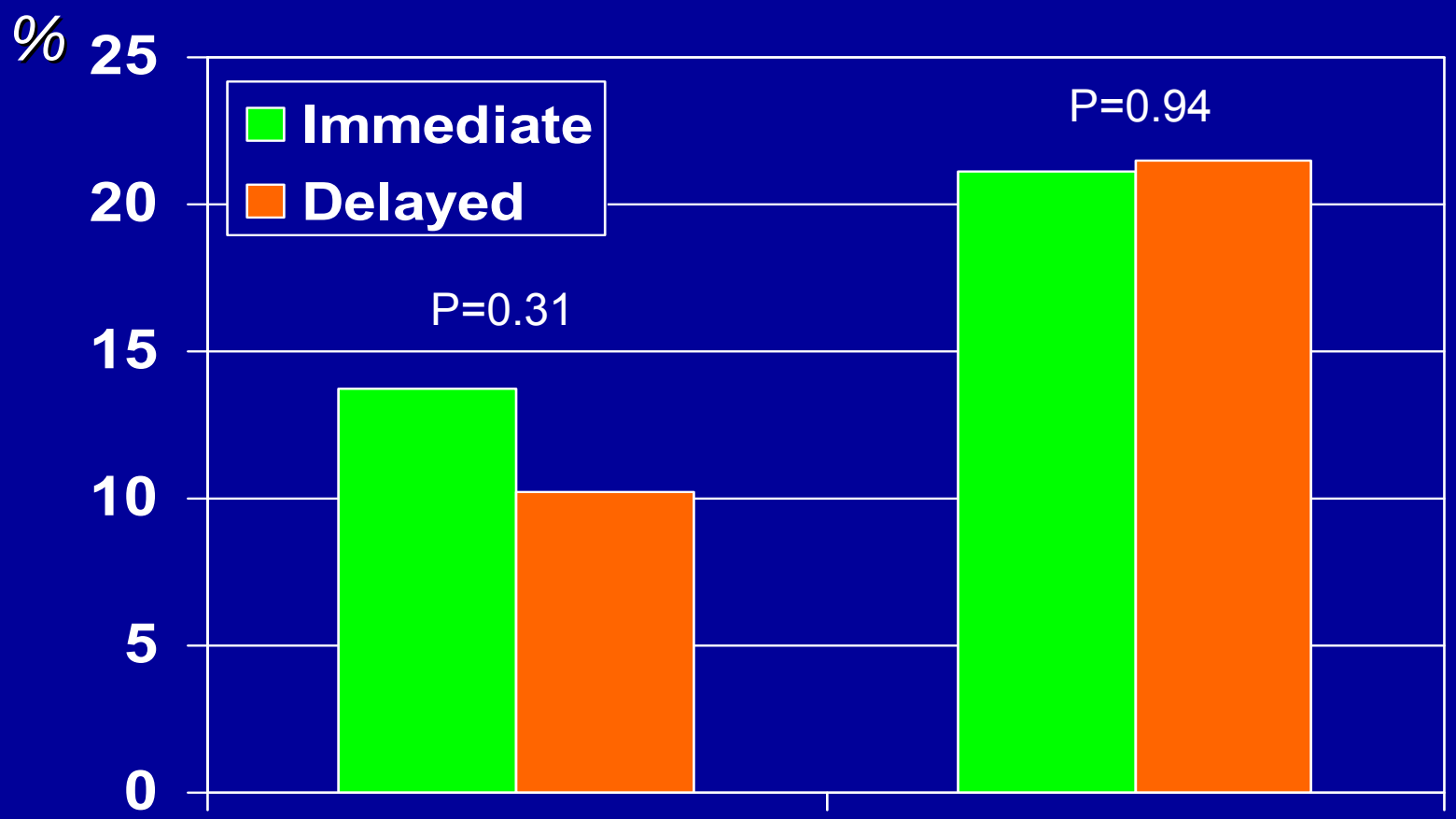
Preliminary Results

Primary EP (peak of troponin I)



Preliminary Results

Composite Ischemic Endpoints at 1 month



Key secondary EP

Preliminary Results

Safety outcomes at 1 month

	Immediate	Delayed	P
Major bleeding at 1 month, (%)	**4.0**	**6.8**	*0.25*
Non-CABG related major bleeding,	2.3	5.1	*0.26*
CABG-related major bleeding	1.7	1.7	*1.00*
Transfusion ≥ 2 units	3.4	5.6	*0.32*
Transfusion ≥ 5 units	1.1	1.1	*1.00*
Thrombocytopenia at 1 month, (%)	**2.9**	**4.5**	*0.41*
Non-CABG thrombocytopenia, (%)	2.3	4.0	*0.54*
Post-CABG thrombocytopenia, (%)	0.6	0.6	*1.00*

Preliminary Results

The patient underwent PCI with support of Eptifibatide. Four hours later – upper GI bleeding with HB drop from 13.5 to 8.5 gr%. Hemodynamically stable, moderate CP post PCI with 1 mm ST depression.

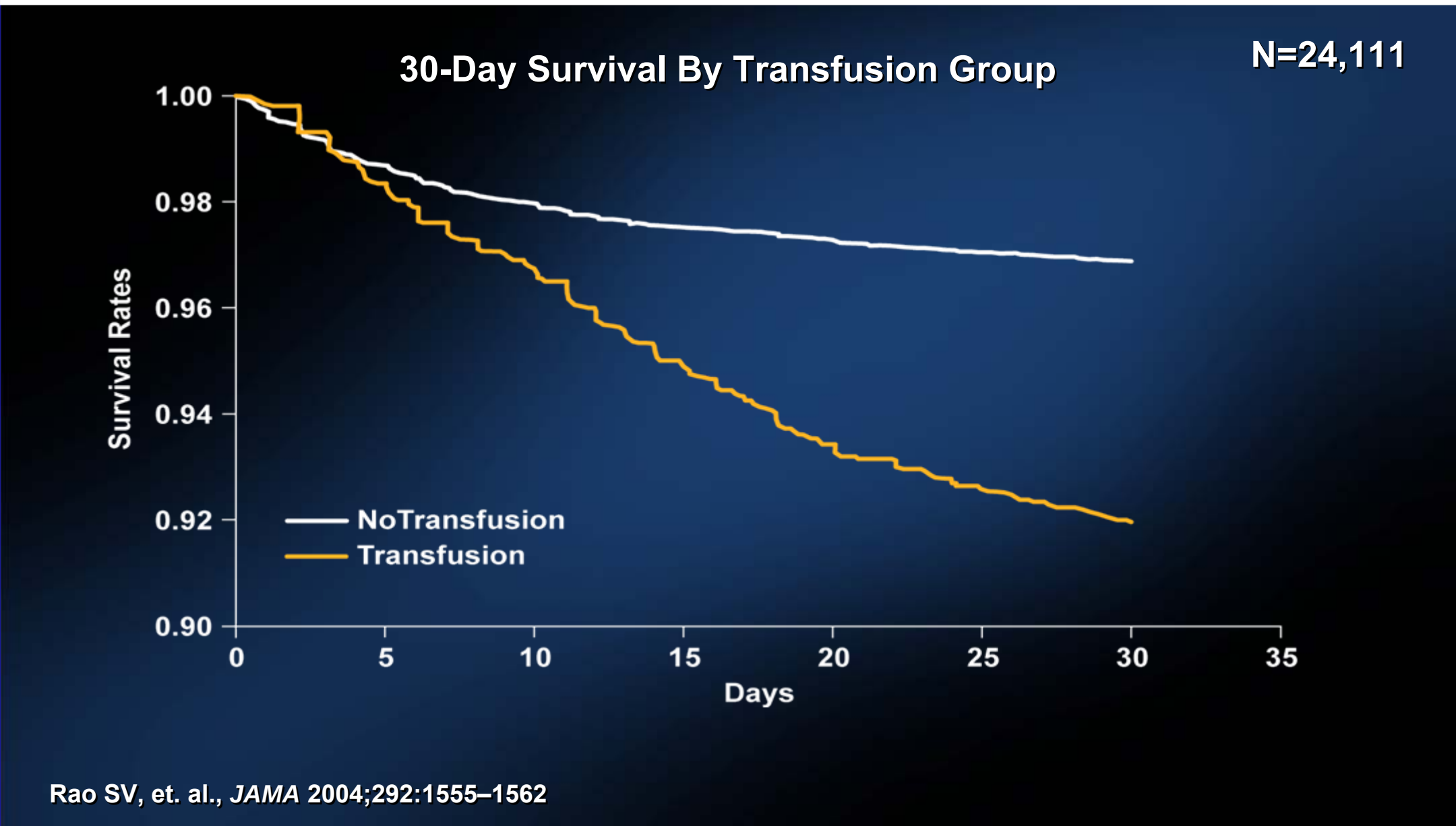
What is the next step?

Bleeding in ACS

Questions to be answered:

- Do blood transfusions have predictive value?
- Do blood transfusions correct negative impact of bleeding?

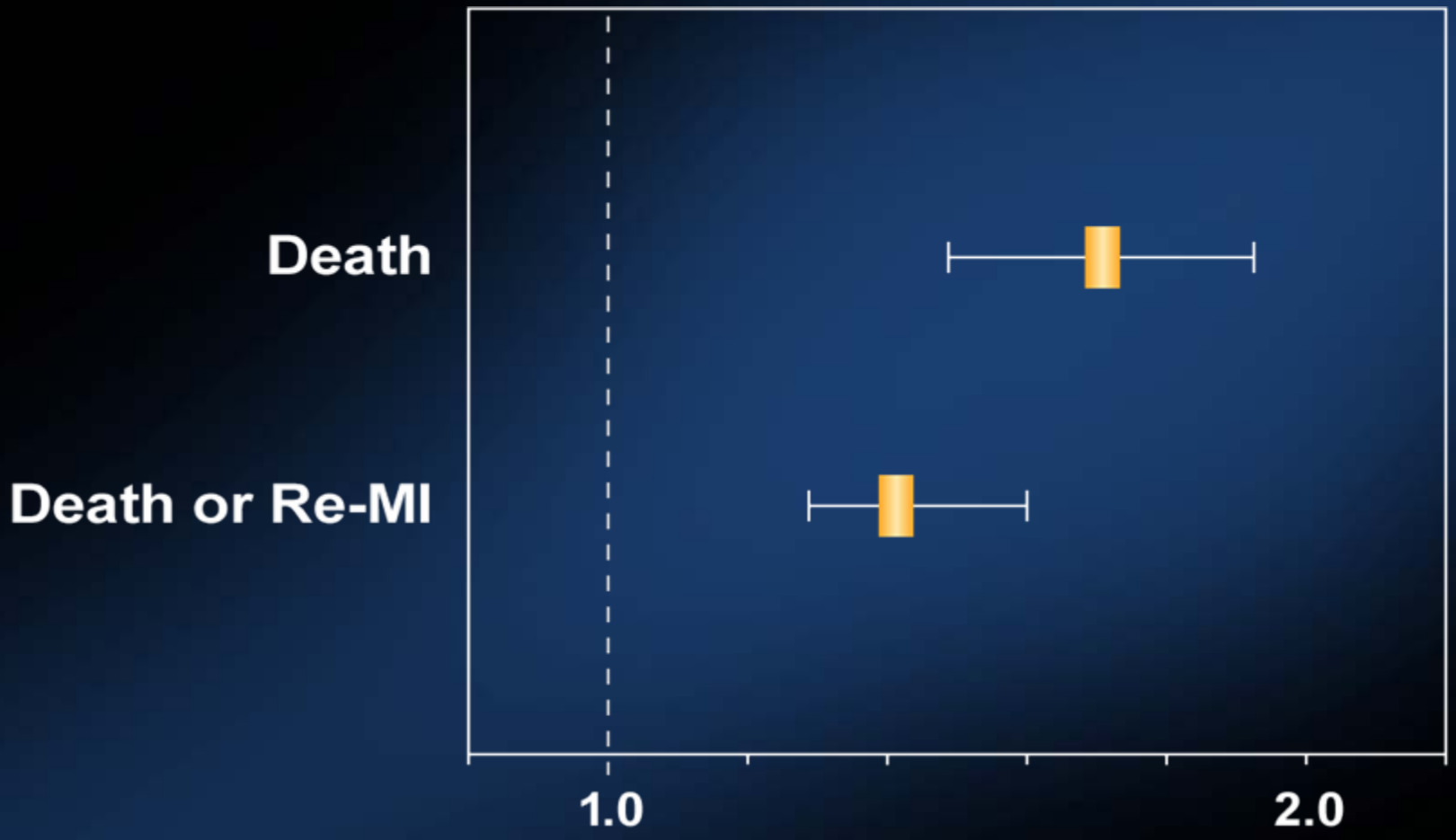
Transfusion in ACS



Rao SV, et. al., *JAMA* 2004;292:1555–1562

Adjusted Risk of In-Hospital Outcomes By Transfusion Status*

N=74,271 ACS patients from CRUSADE



Yang X, *J Am Coll Cardiol* 2005;46:1490–5.

*Non-CABG patients only

Addendum

Eptifibatide & ASA were discontinued. Omeprazole, increased dose of beta blockers, nitrates were given. Pain & ECG changes resolved.

Discharged home after endoscopy revealed gastritis only, with clopidogrel 75 mg/day and ASA 75 mg/day.

בהצלחה !!