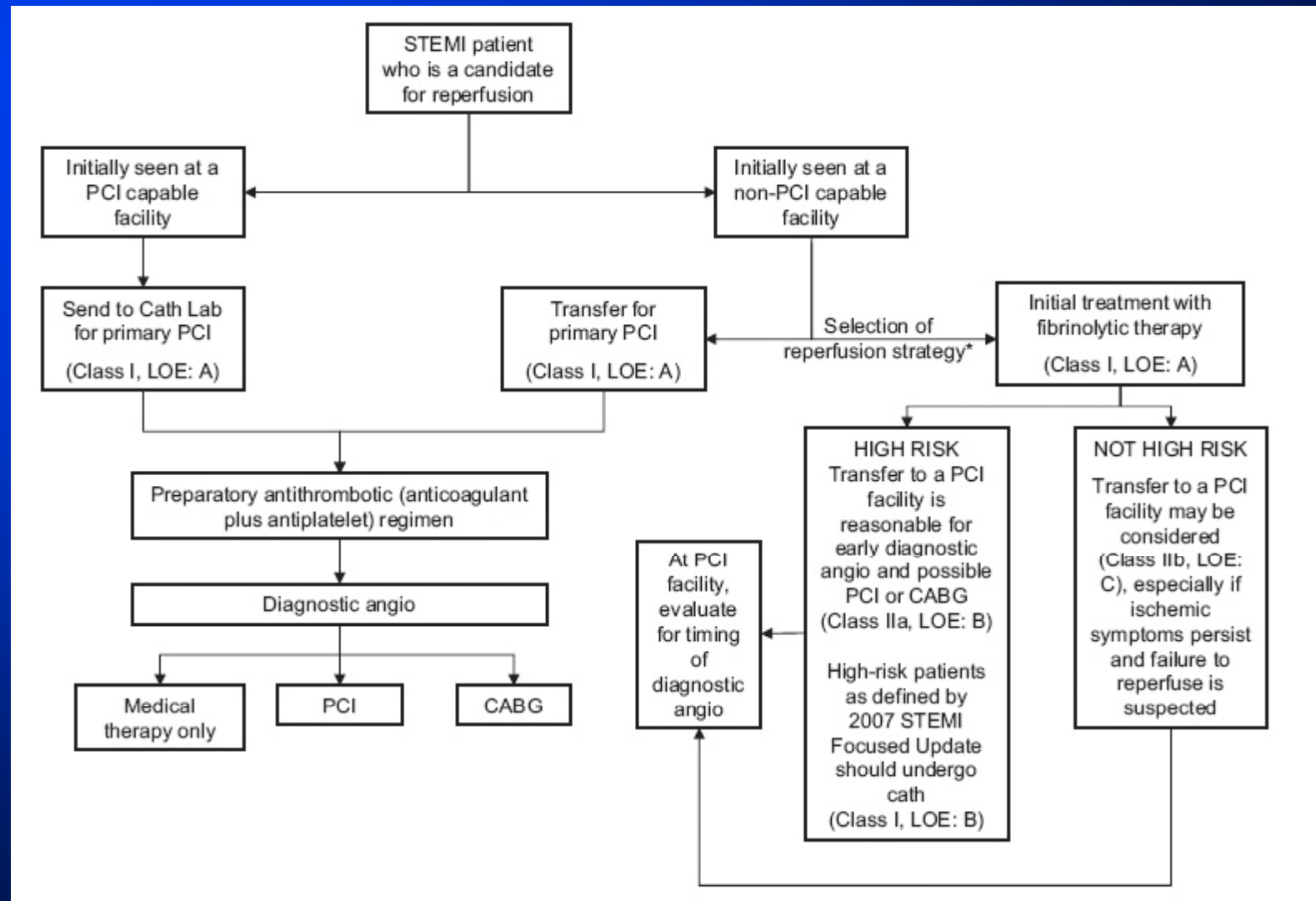


Treatment of STEMI in 2011: Management of Patients Presenting to Non-PCI Centers

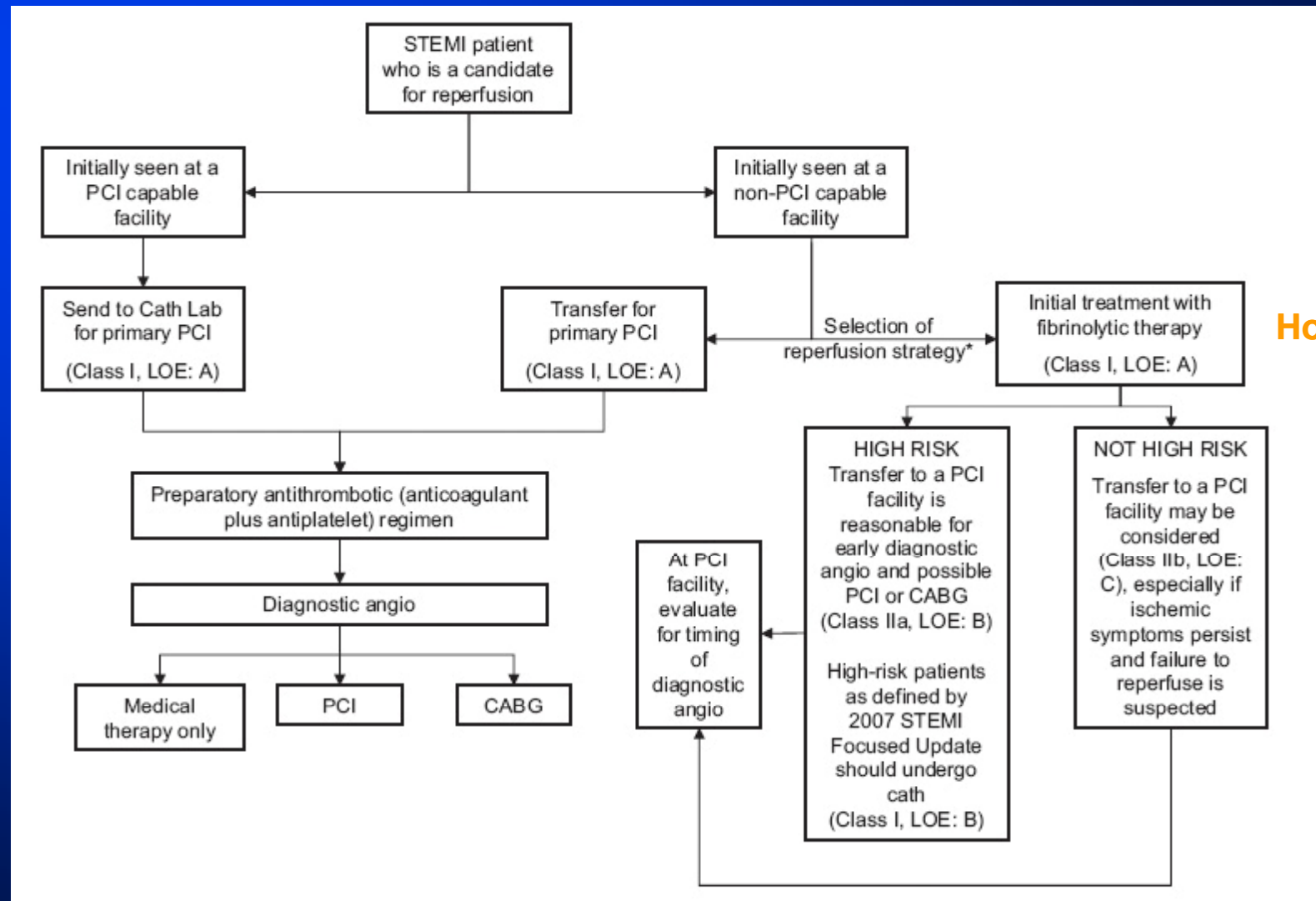
Stephen G. Ellis, M.D.
Professor of Medicine
Director Invasive Services
Co-Director Cardiac Gene Bank



2009 ACC Guidelines: Triage and Transfer for PCI



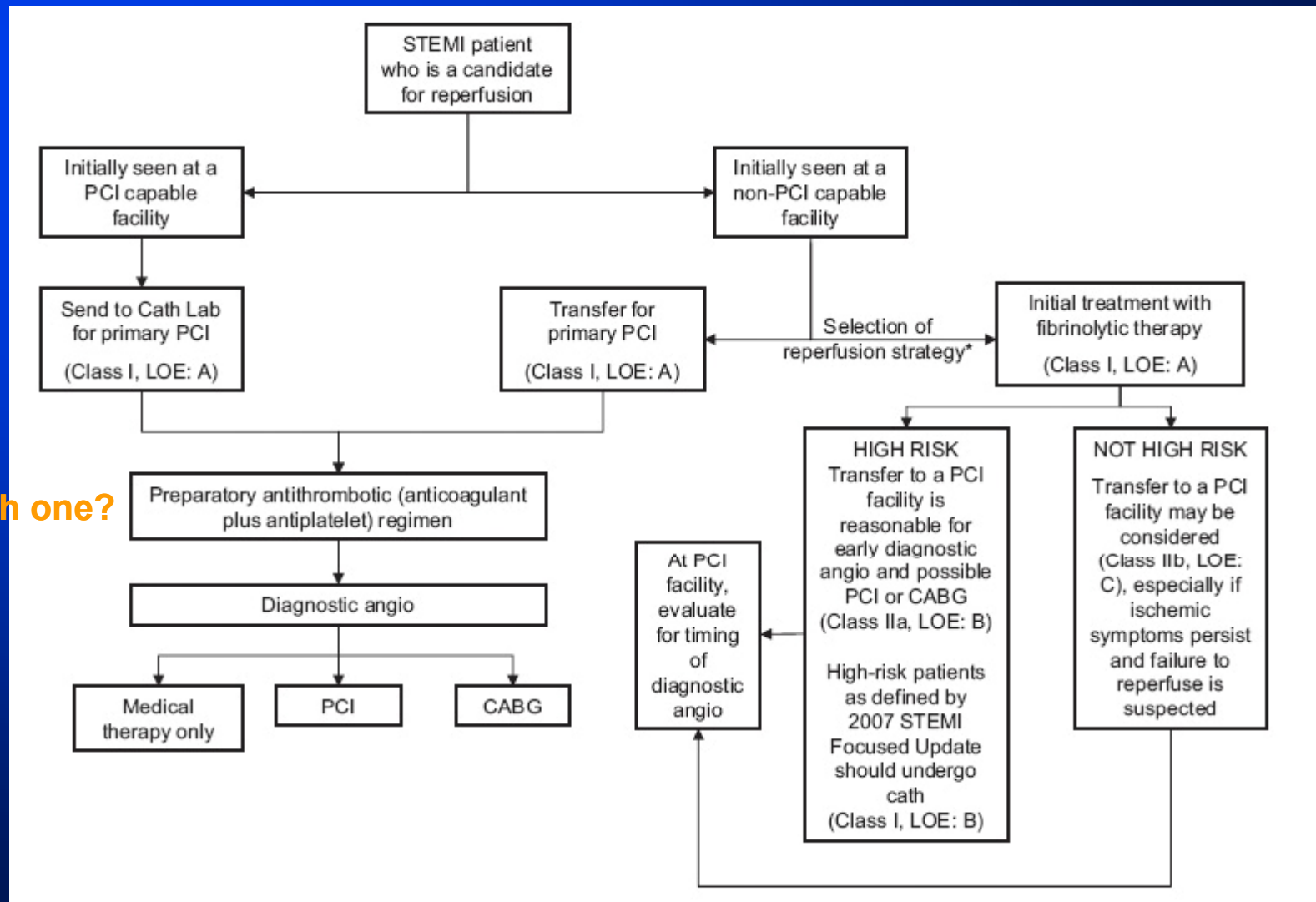
2009 ACC Guidelines: Triage and Transfer for PCI



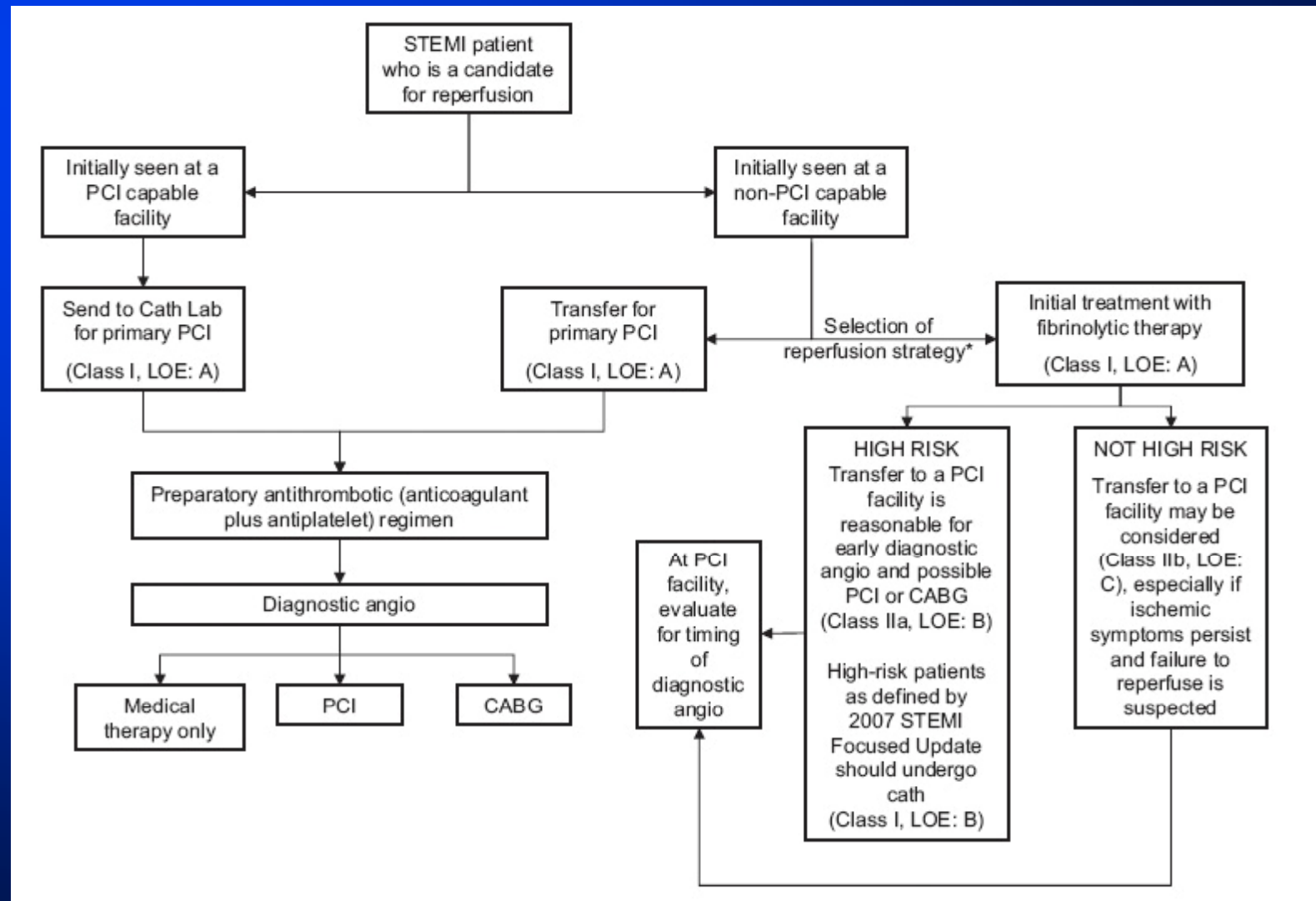
How do you tell?

2009 ACC Guidelines: Triage and Transfer for PCI

Which one?

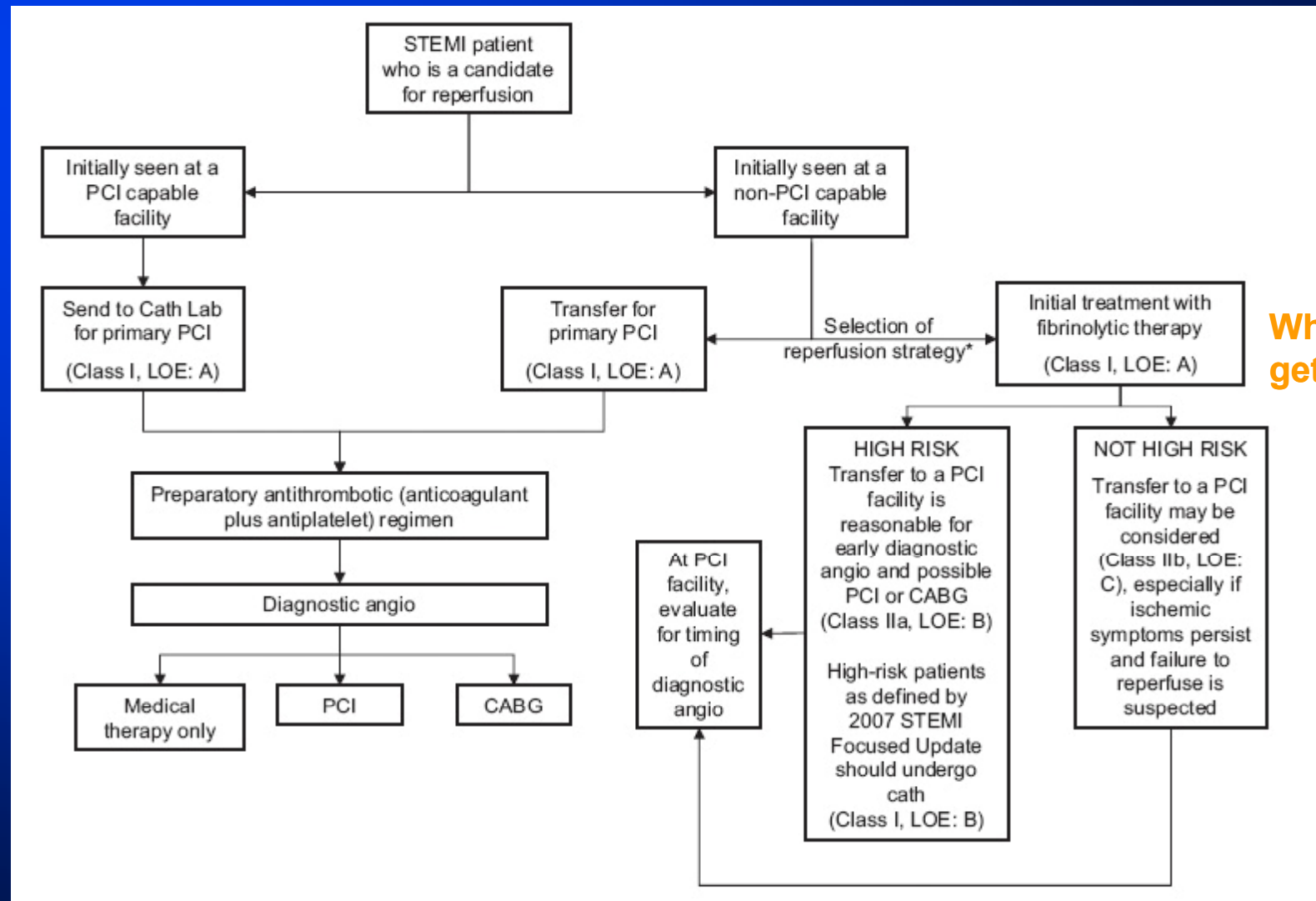


2009 ACC Guidelines: Triage and Transfer for PCI



How high risk?

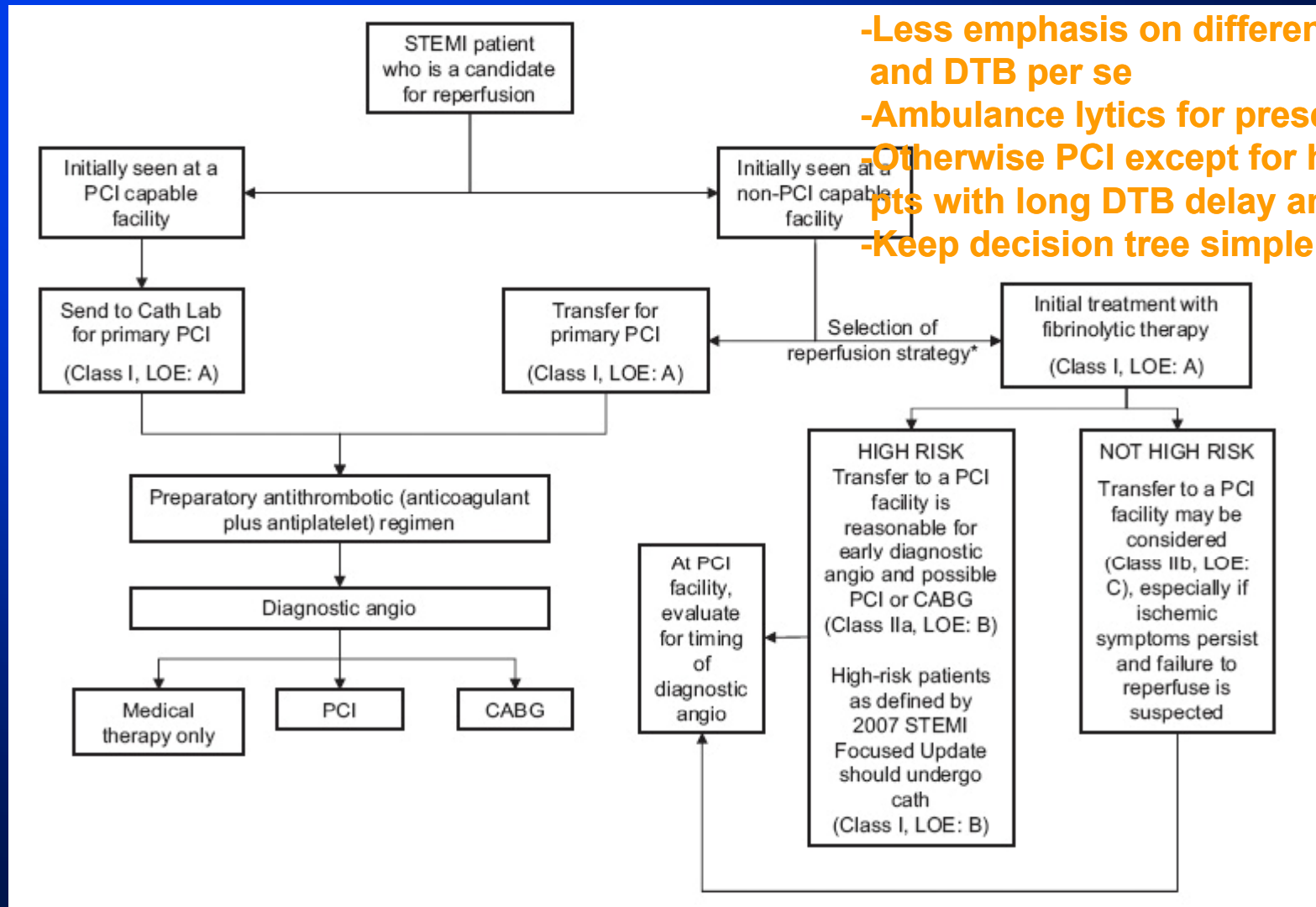
2009 ACC Guidelines: Triage and Transfer for PCI



Who should get lytics?

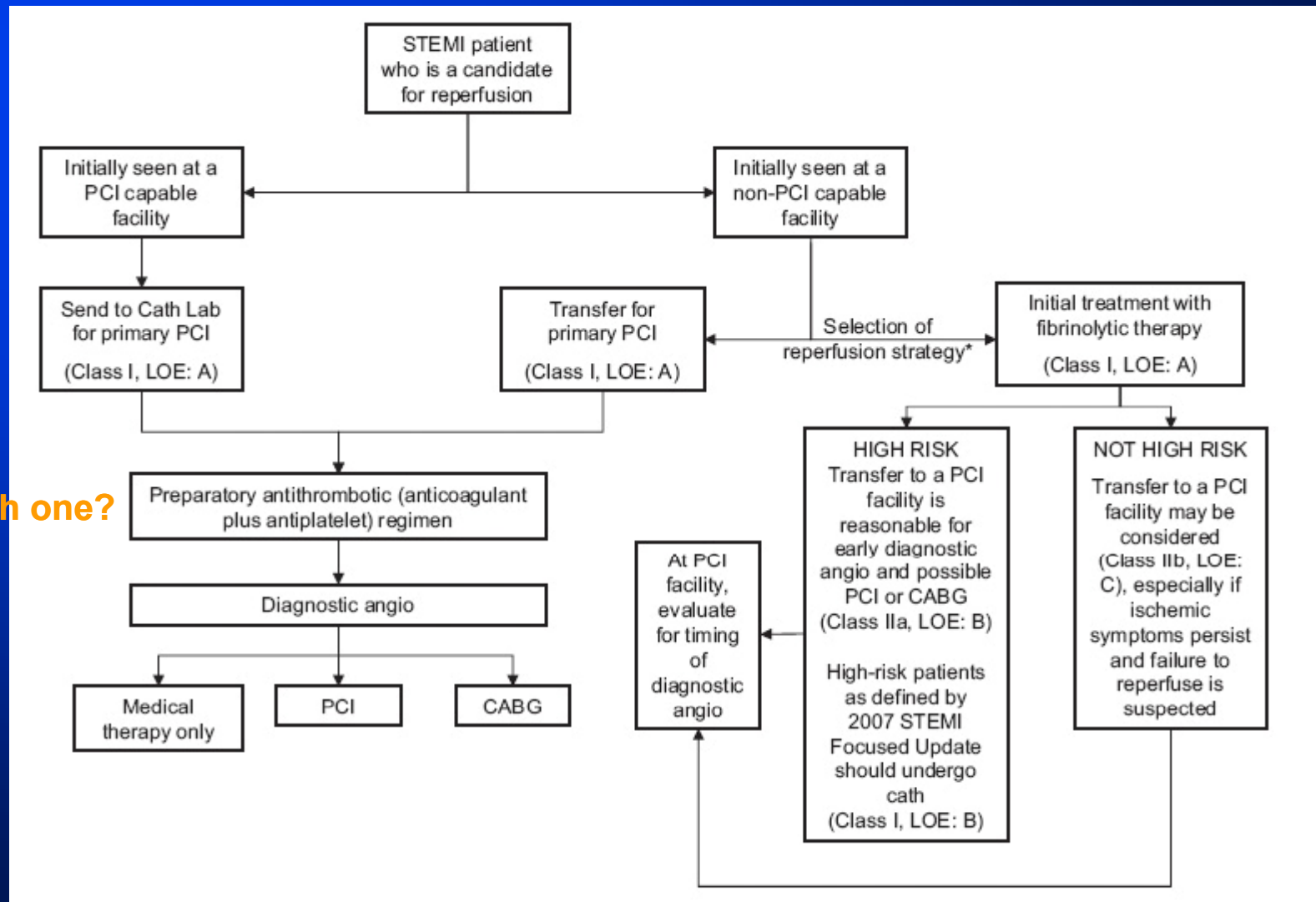
2009 ACC Guidelines: Triage and Transfer for PCI

- Less emphasis on difference between DTN and DTB per se
- Ambulance lytics for presentation < 90 min
- Otherwise PCI except for high risk, early presenting pts with long DTB delay and low risk of bleeding
- Keep decision tree simple (thinking->delays)



2009 ACC Guidelines: Triage and Transfer for PCI

Which one?



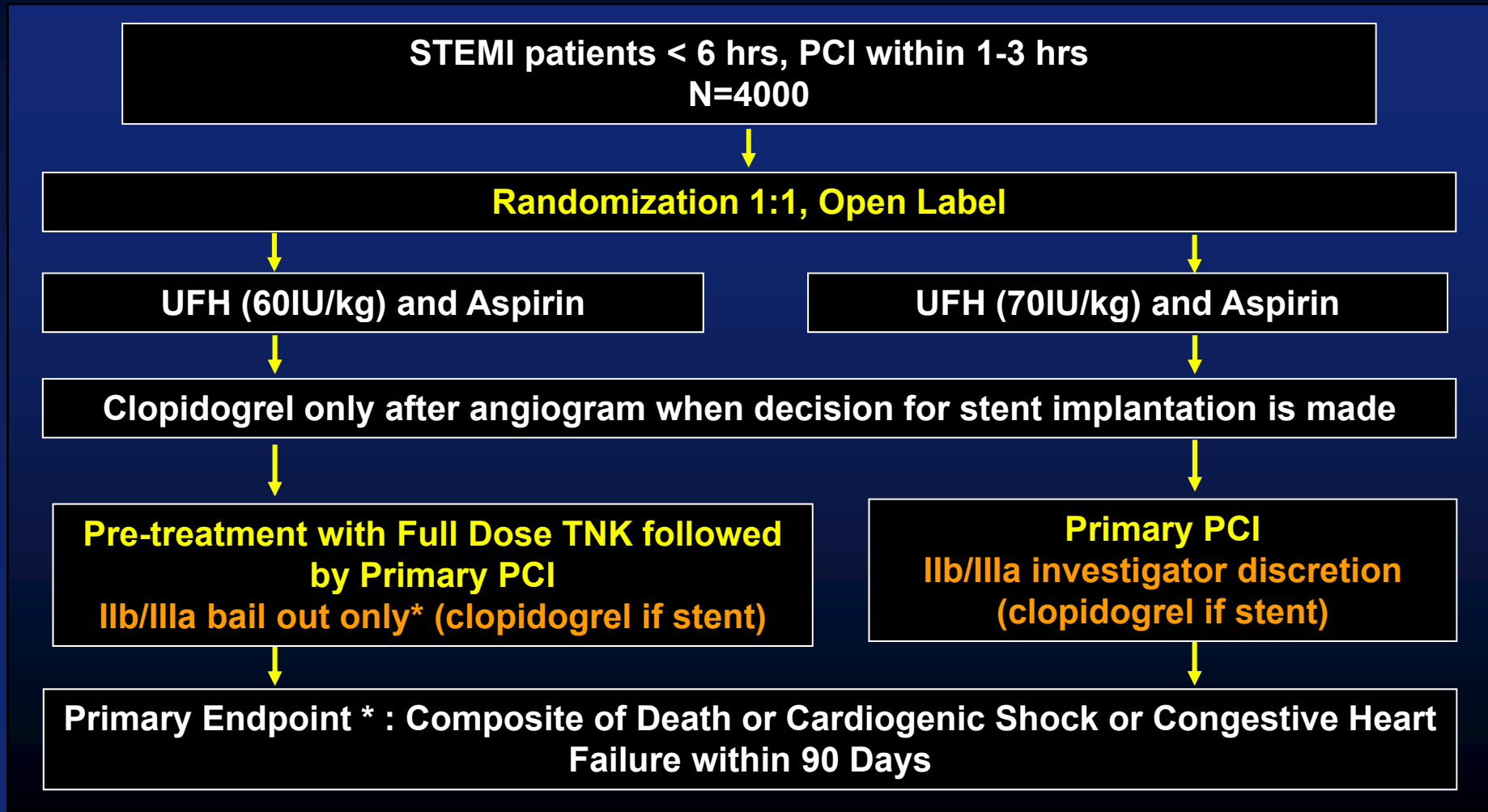
PCI After Lytics / GPI

Facilitated PCI/Rationale

- **Early reperfusion salvages myocardium**
- **In many areas, door to balloon times exceed ACC recommended <90 min**
- **Some combination of antiplatelet + lytic treatment can open IRA before PCI in many cases**

ASSENT IV - Trial Design

ASSENT IV Study Design

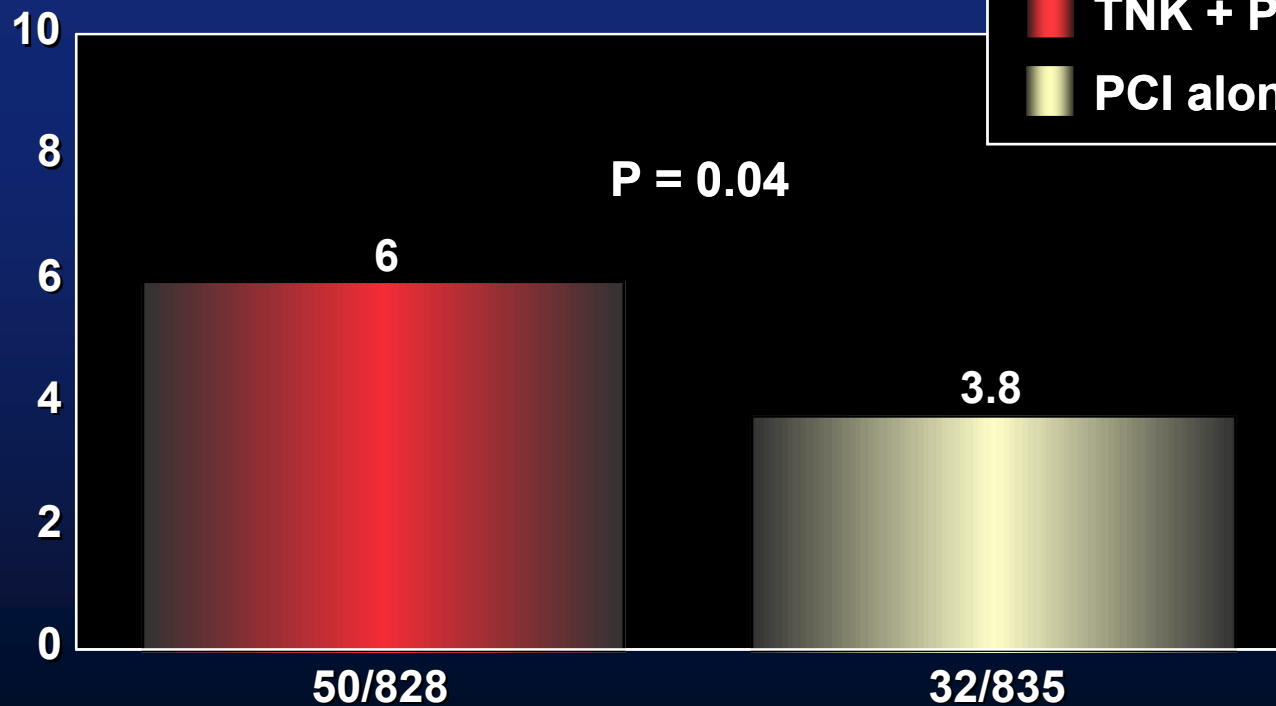


**Used in only 9.6%*

Stopped on Basis of Mortality at 30 Days

ASSENT IV Preliminary Data

Mortality (%)

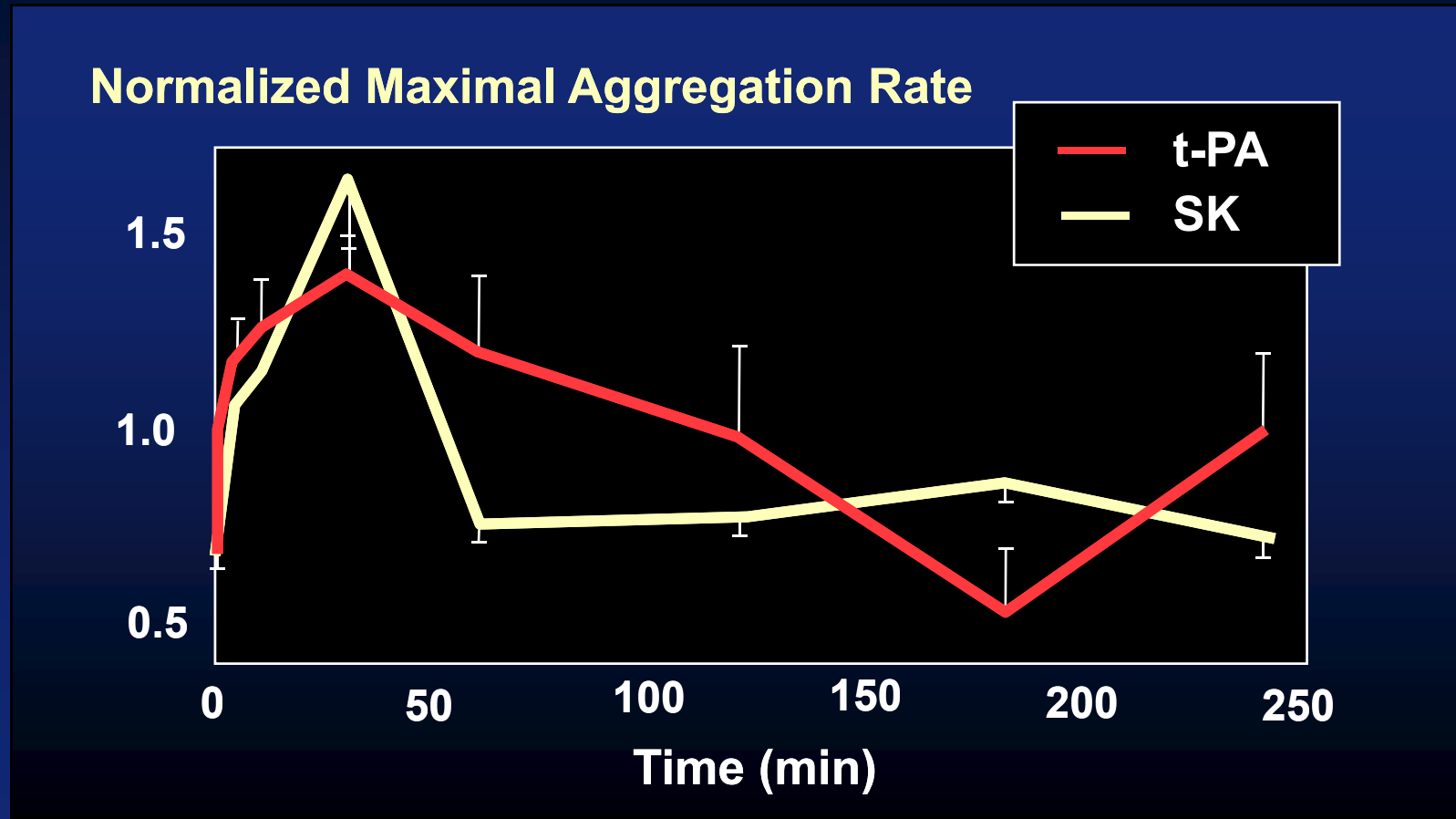


6.7 vs 5.0% (p=.14) at 90 days

18.8 vs 13.7% (p=.006) MACE at 90 days

Acute MI

Platelet Activation by Fibrinolytics



Rabbit model, .05mM ADP as agonist

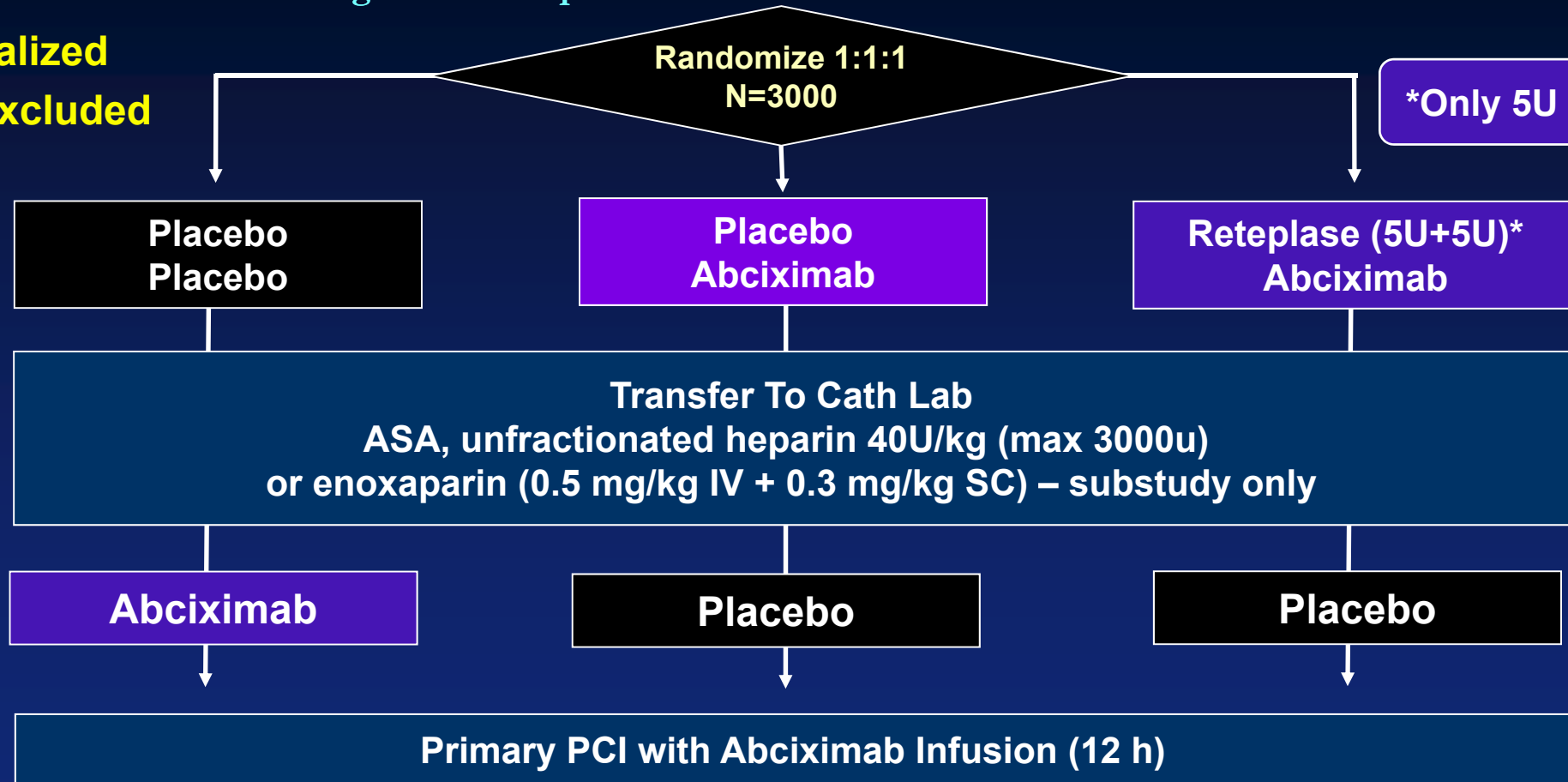
Rudd and Loscalzo, CircRes '90

FINESSE: Study Design

Acute ST Elevation MI (or New LBBB*) within 6h pain onset
Presenting at Hub or Spoke with estimated time to PCI between 1 and 4 hours

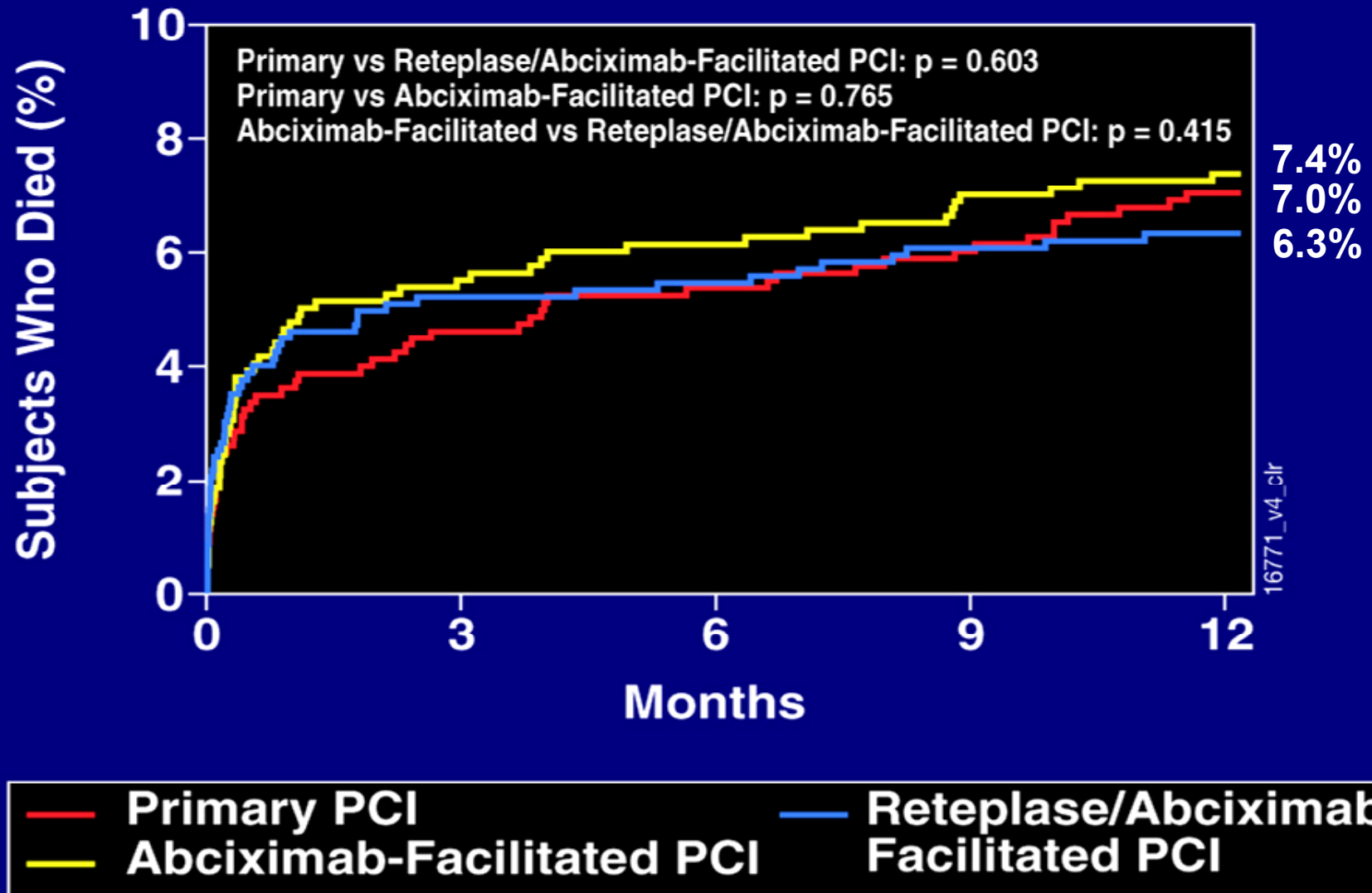
*Localized
IMI excluded

*Only 5U if ≥ 75



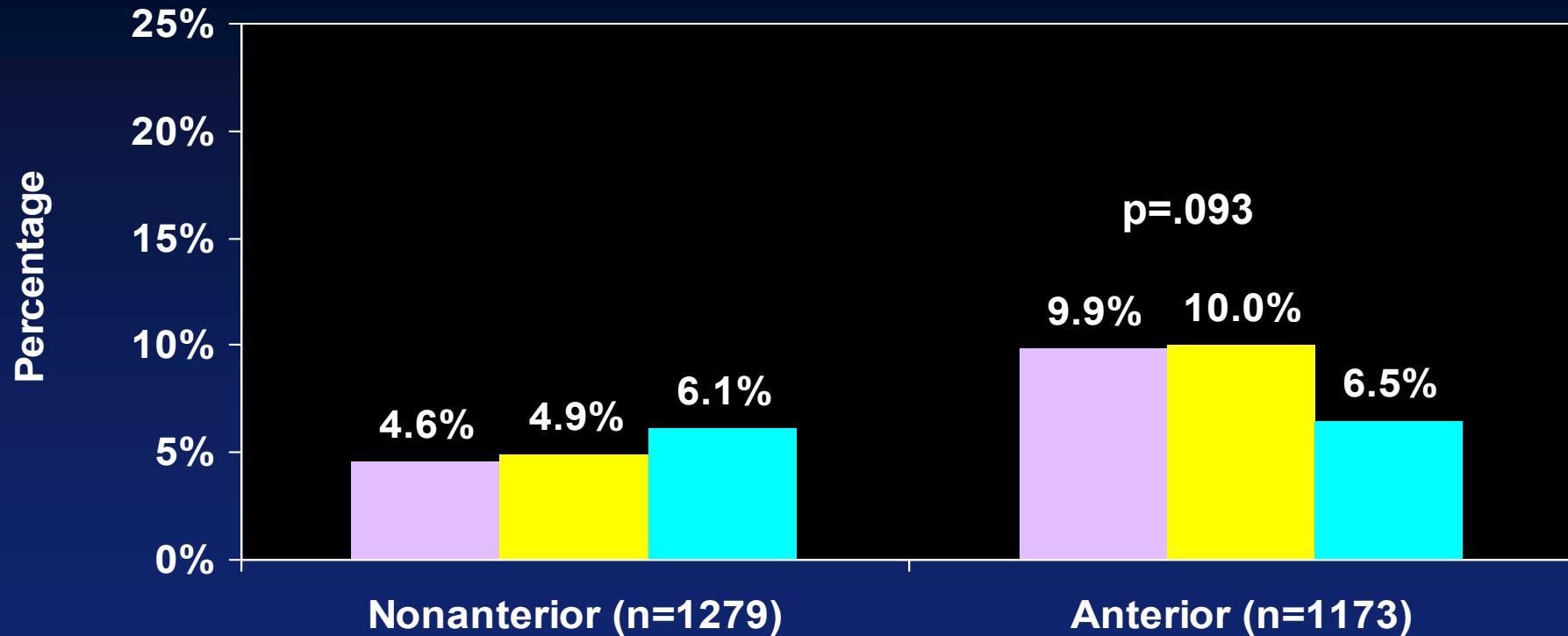
Primary endpoint at 90 days: All-cause mortality, resuscitated VF occurring > 48H, cardiogenic shock, or readmission/ED visit for CHF

All Cause Mortality Through 1 Year



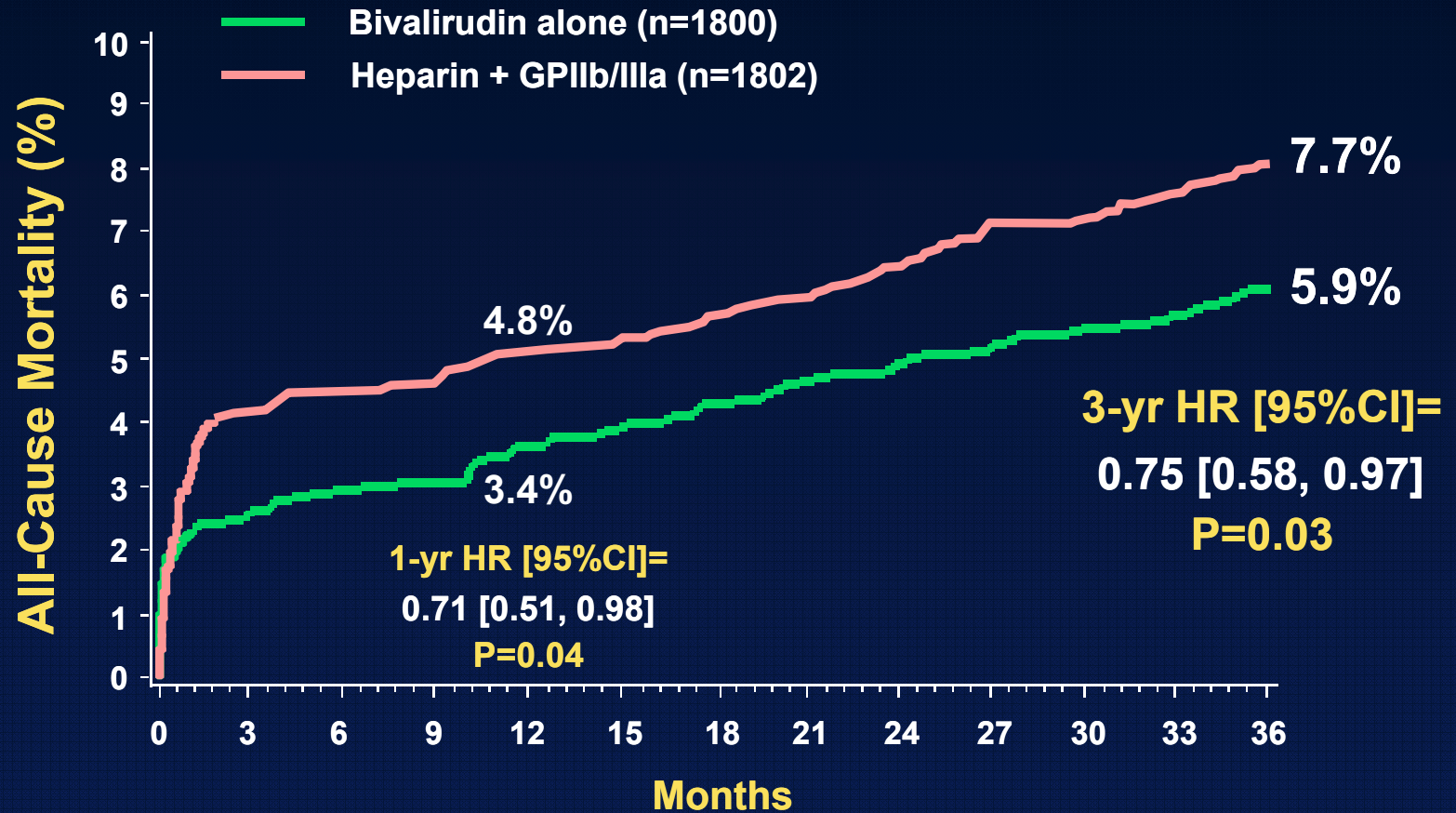
FINESSE: 1 Year Mortality by Infarct Location

All Cause Mortality Through 1 Year



- Primary PCI with In Lab Abciximab
- Abciximab Facilitated PCI
- Abciximab/Retepase Facilitated PCI

HORIZONS: Three-Year All-Cause Mortality

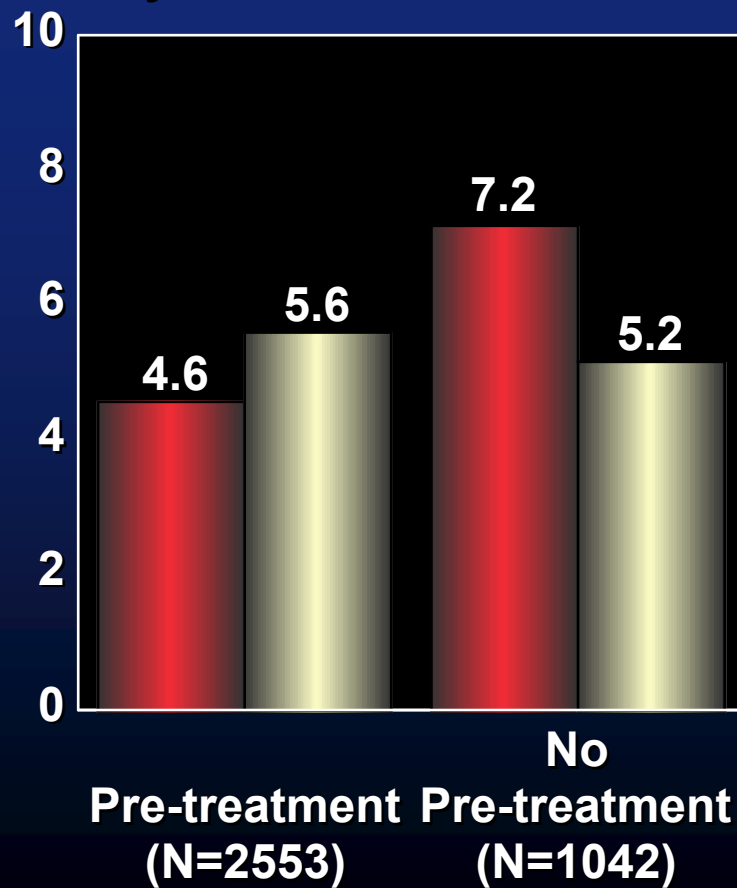


Number at risk

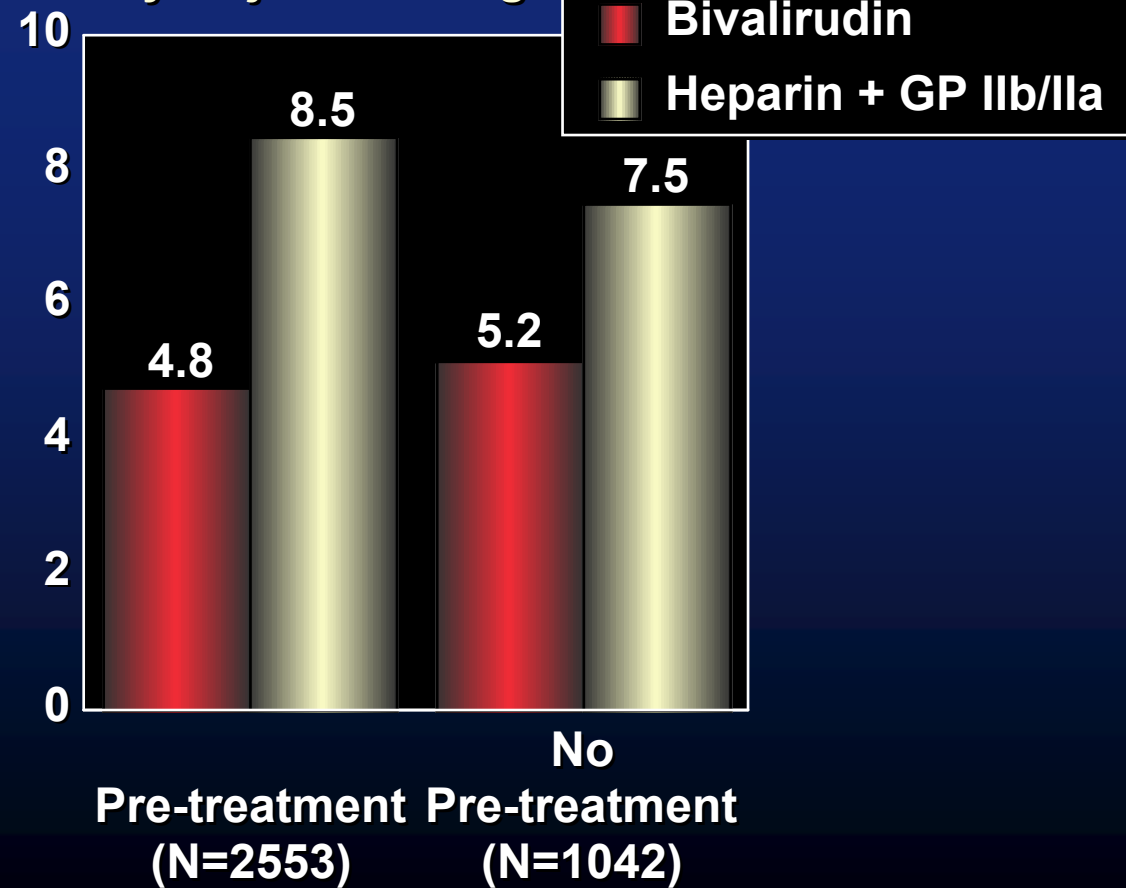
Bivalirudin alone	1800	1689	1660	1633	1611	1574	1098
Heparin+GPIIb/IIIa	1802	1670	1643	1593	1568	1525	1043

Impact of Pre-randomization Heparin in the HORIZONS-AMI Trial

30 Day MACE

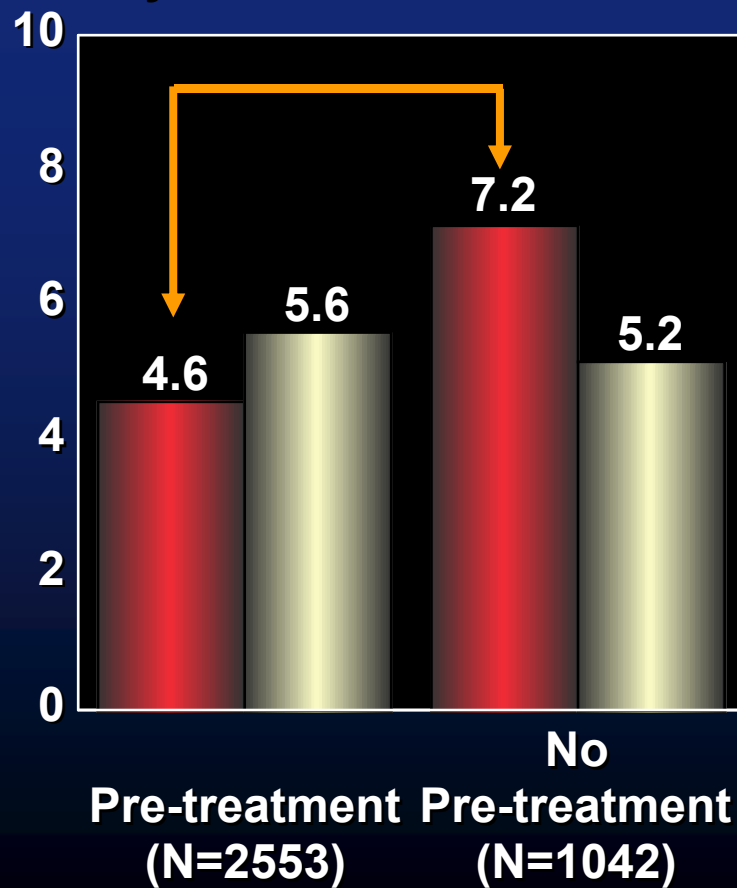


30 Day Major Bleeding

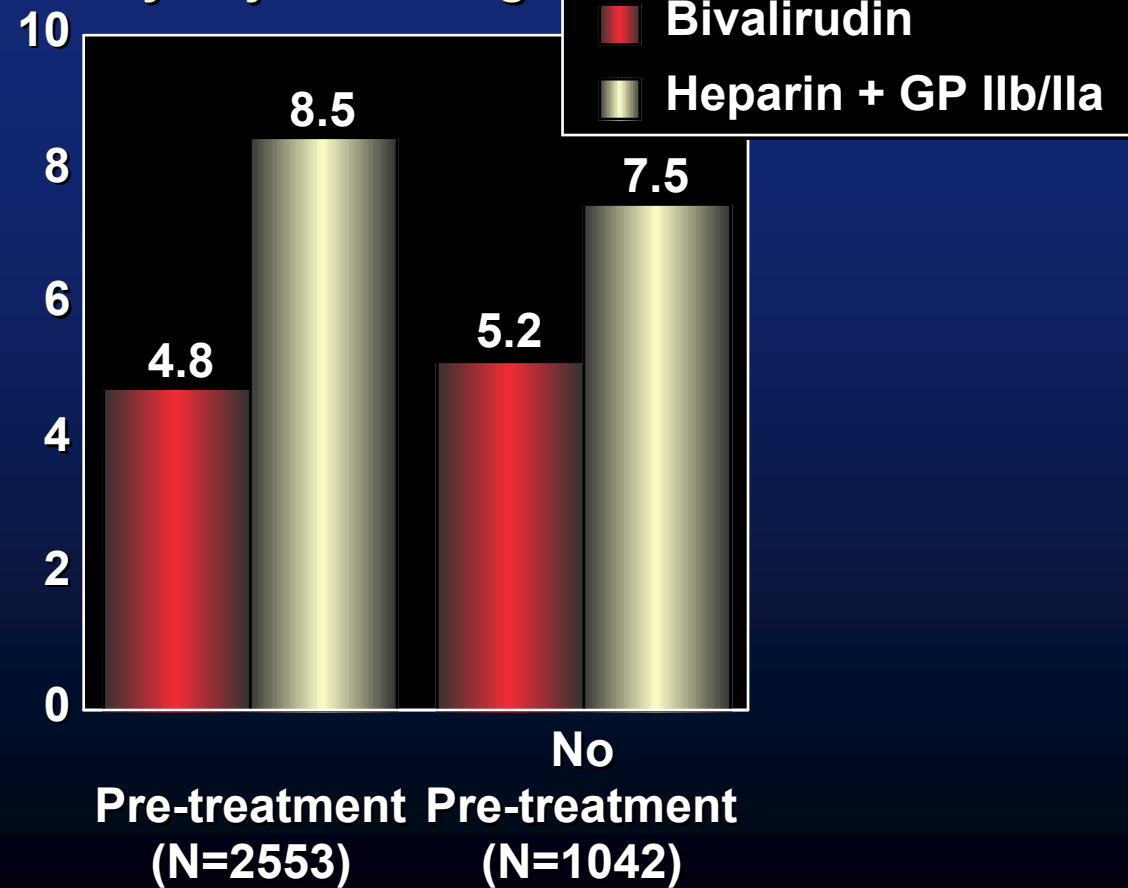


Impact of Pre-randomization Heparin in the HORIZONS-AMI Trial

30 Day MACE

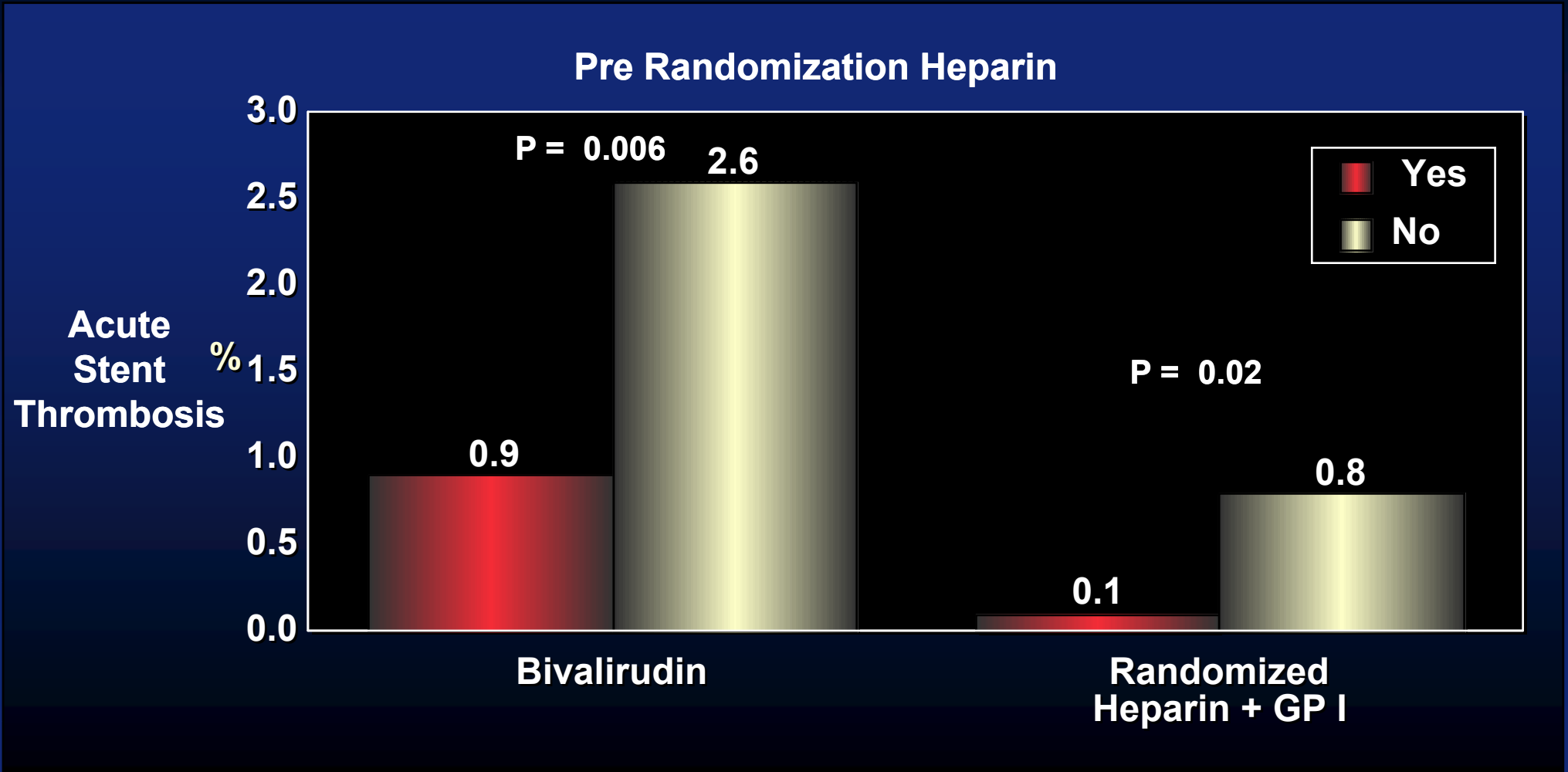


30 Day Major Bleeding

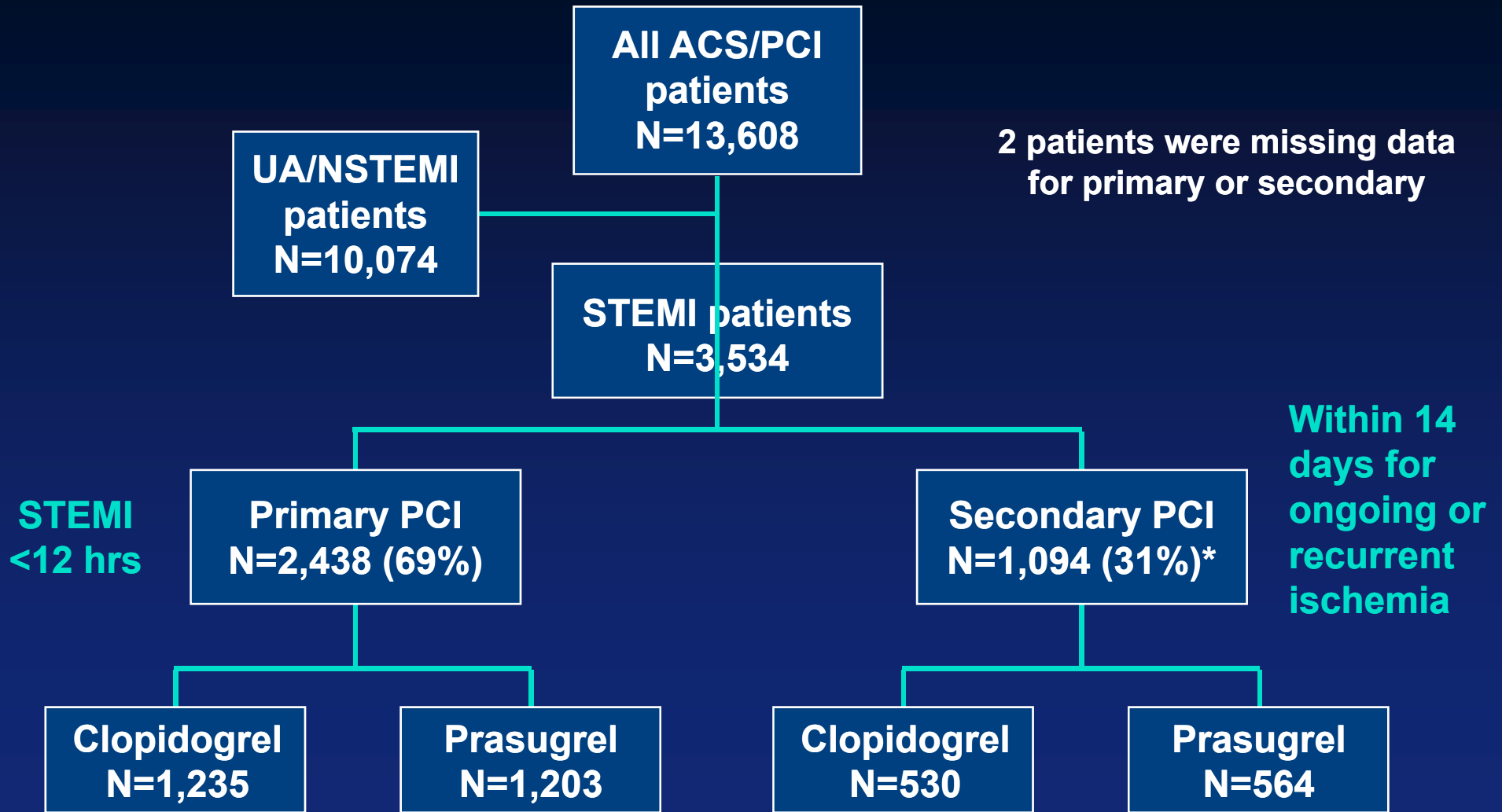


STEMI

Importance of Early Heparin Administrative/ Horizons

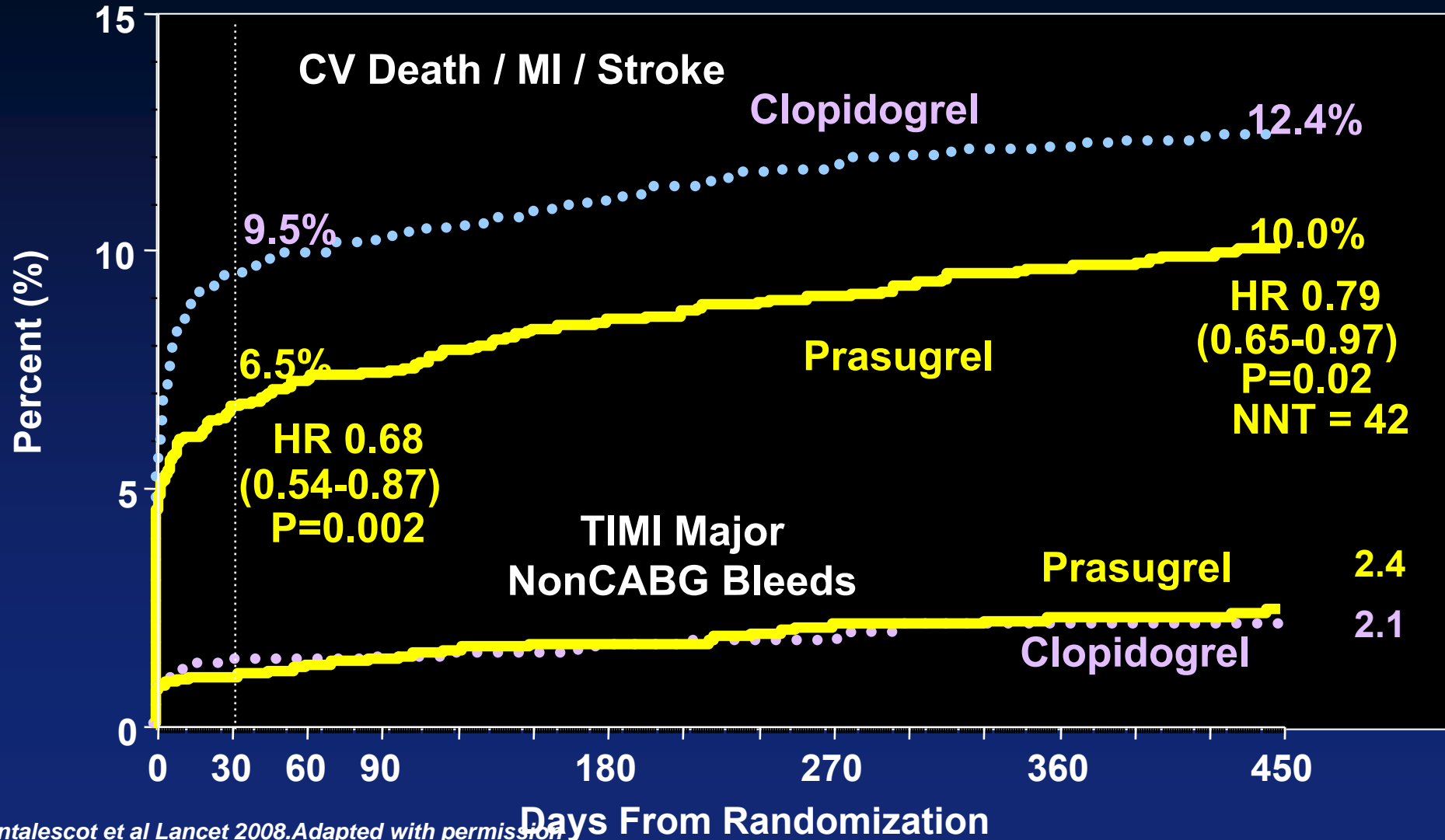


Triton TIMI 38 STEMI



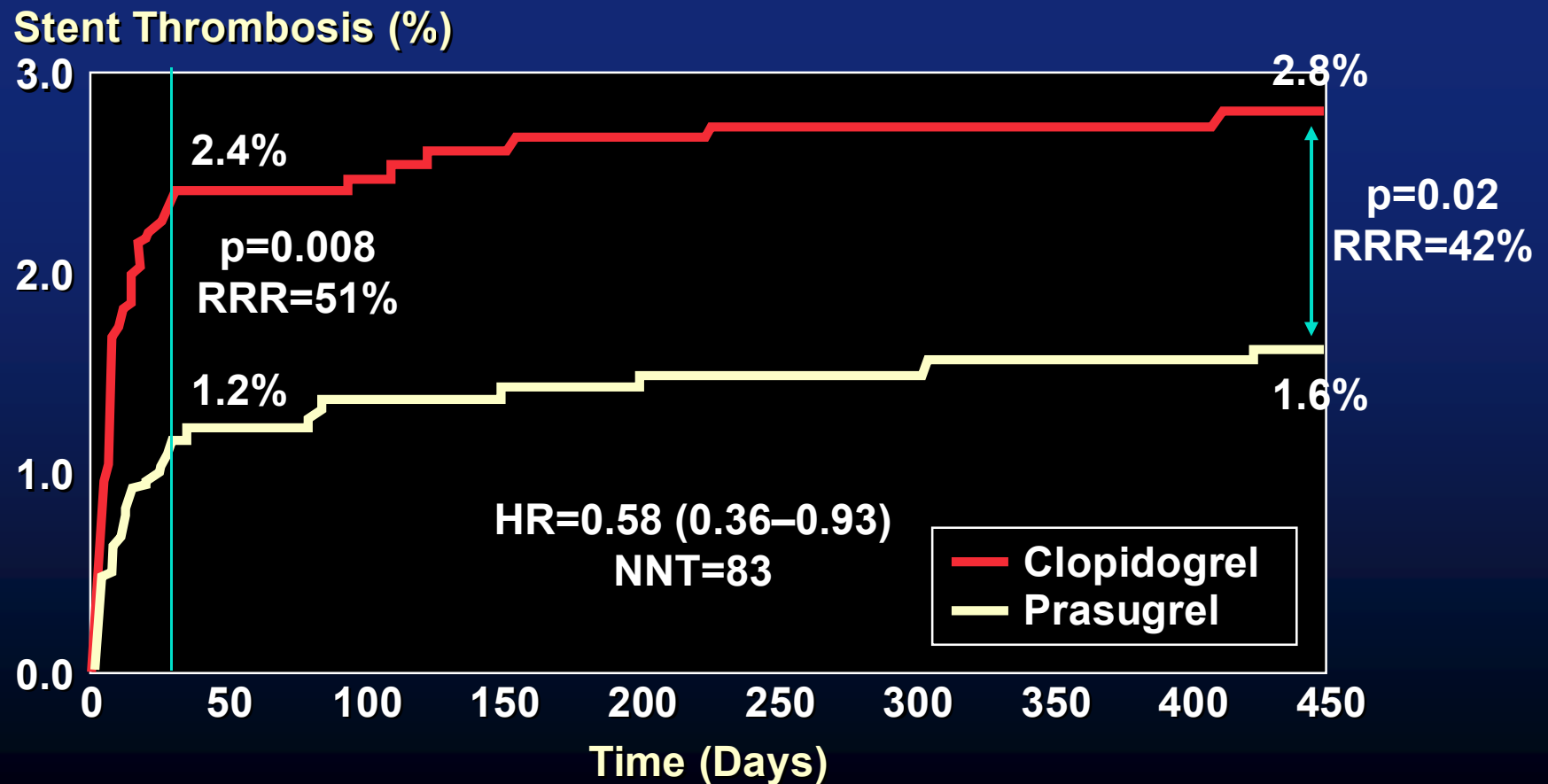
TRITON TIMI-38

**STEMI Cohort
N=3534**



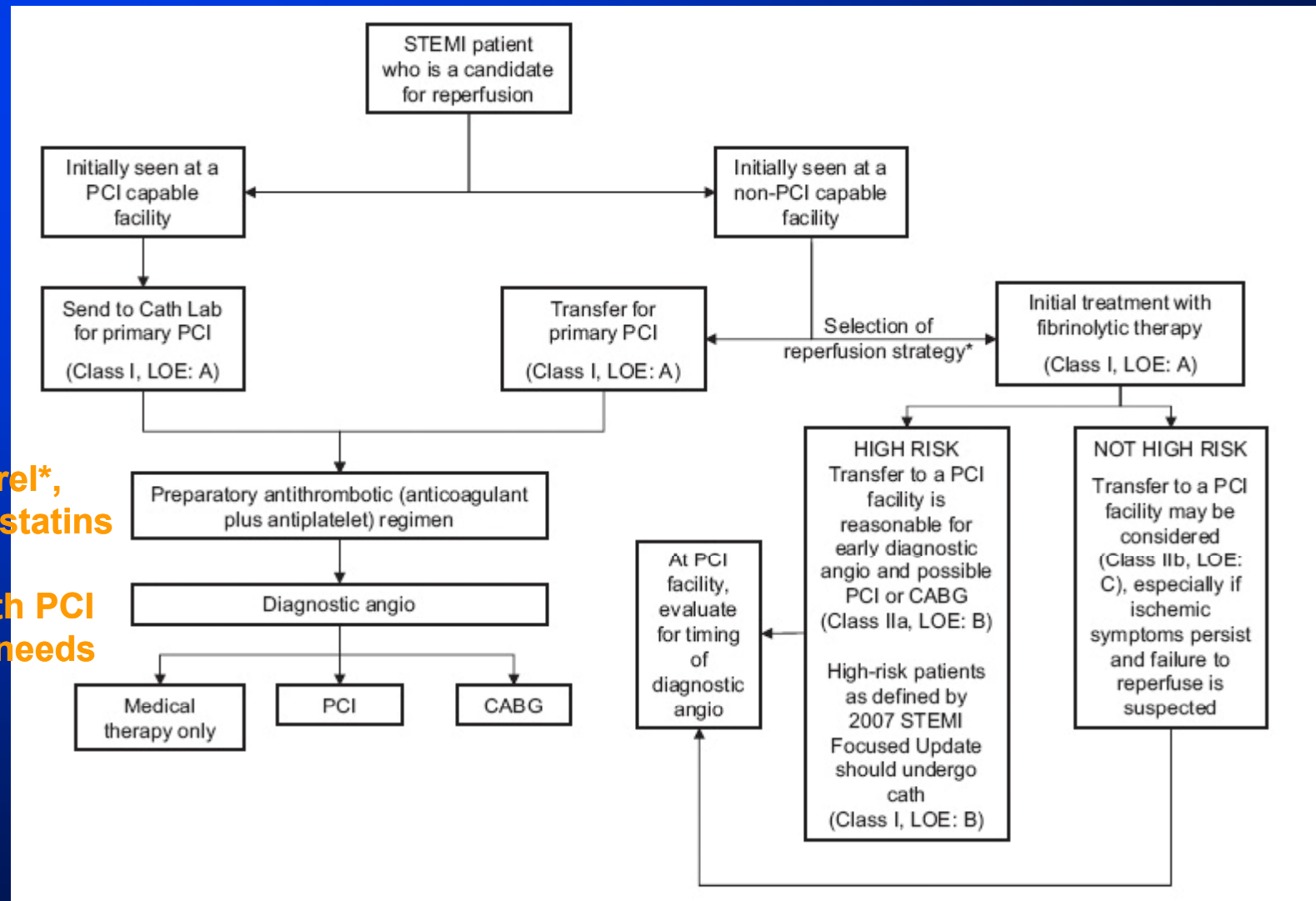
Montalescot et al Lancet 2008. Adapted with permission from Antman EM.

Triton TIMI 38: Stent Thrombosis: Definite/Probable



Montalescot G et al. Lancet 2009;373:723–31

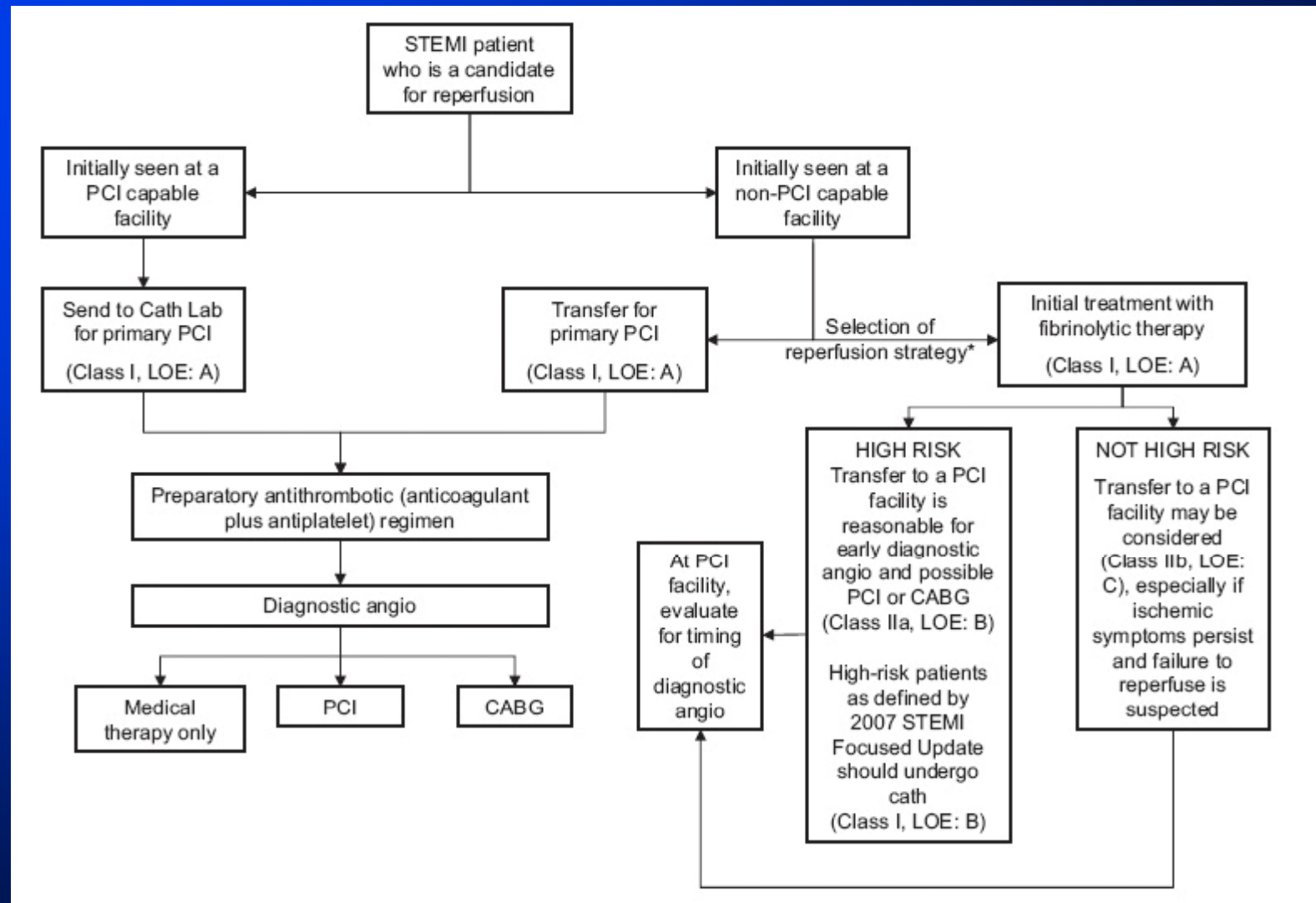
2009 ACC Guidelines: Triage and Transfer for PCI



ASA, Prasugrel*, heparin, BB, statins

*May give with PCI (clopidogrel needs loading)

2009 ACC Guidelines: Triage and Transfer for PCI



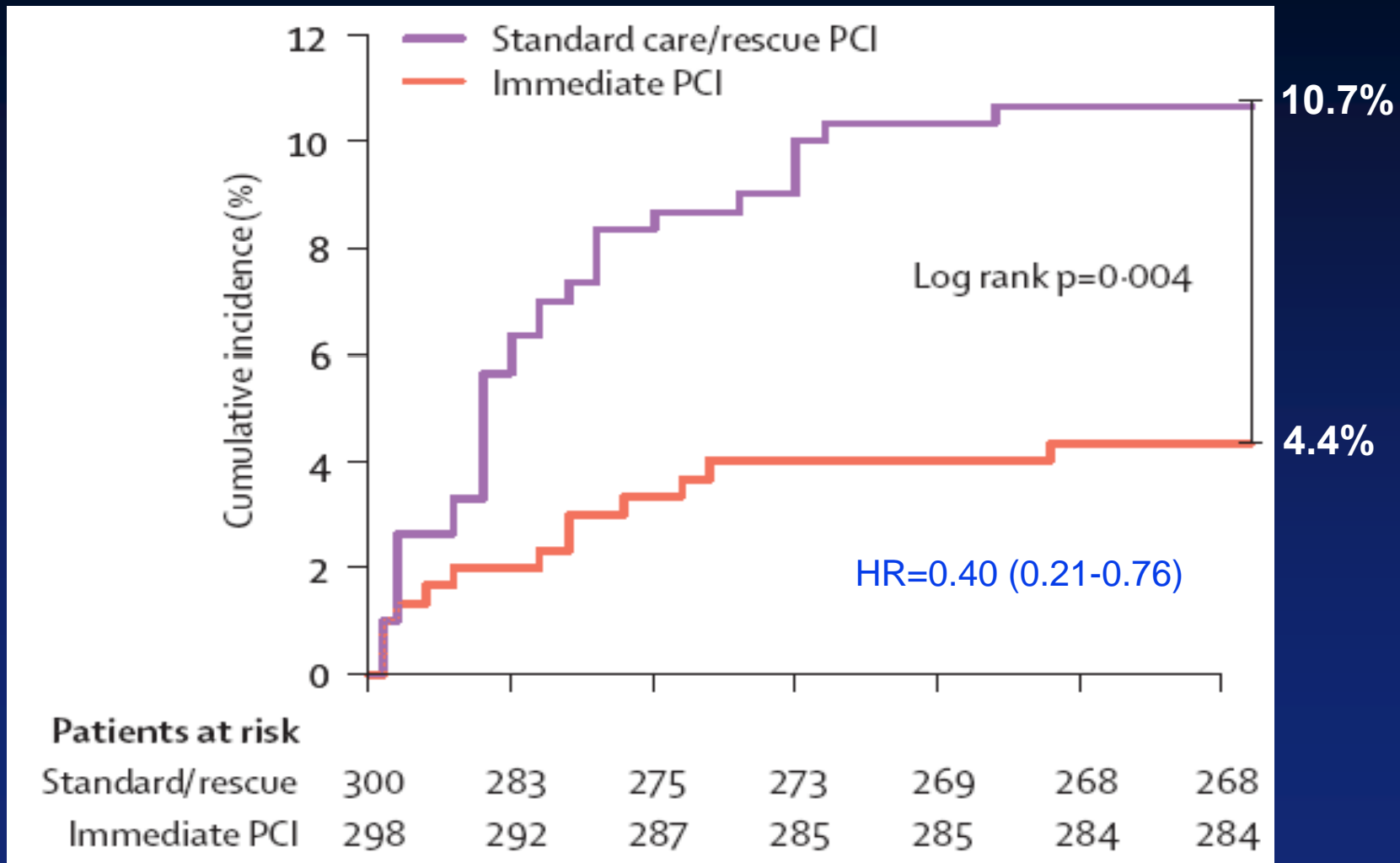
How high risk?

CARESS-IN-AMI: Design

- **Designed to address optimum treatment in pts for whom primary PCI not readily available**
- **Comparison, after half dose reteplase+abciximab, between routine immediate referral for cath/PCI and selective rescue PCI approach in pts who do not qualify for primary angioplasty**
- **High risk patients only (Killip class > 2, EF \leq 35%, ST elevation cumulative > 15 mm)**

CARESS-IN-AMI: Primary Outcome

primary outcome (composite of all cause mortality, reinfarction, & refractory MI within 30 days)
 occurred significantly less often in the immediate PCI group vs. standard care/rescue PCI group

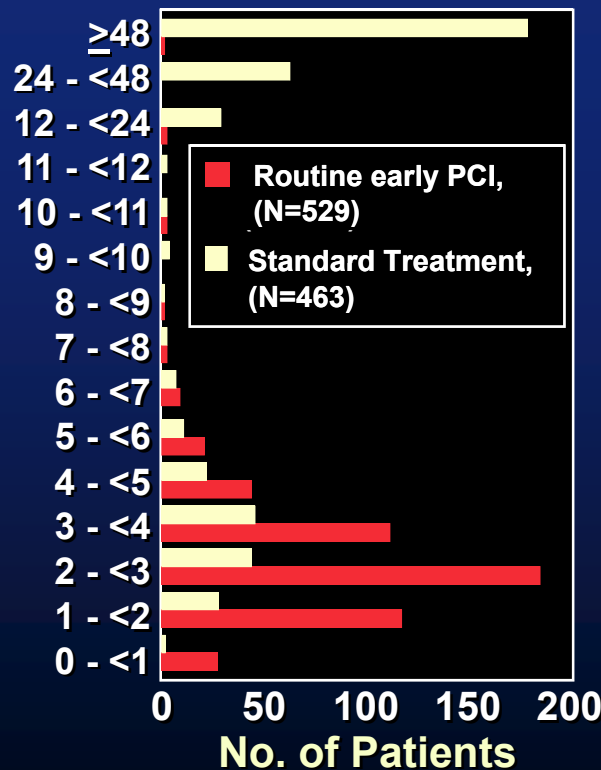


Transfer AMI

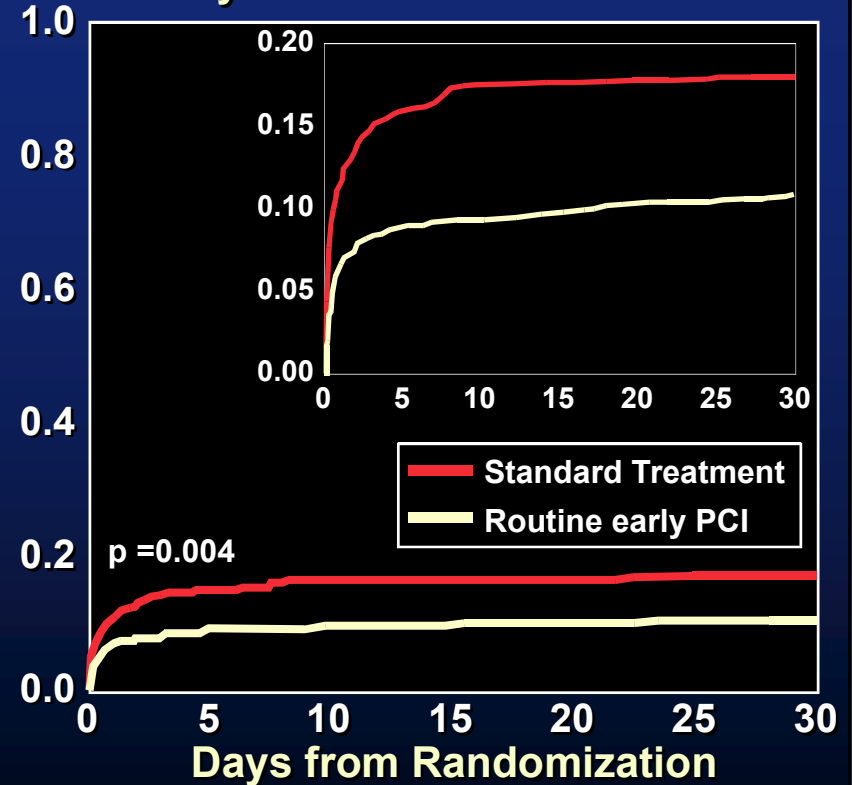
Cath/PCI After Lysis: Routine or Rescue?

1,059 pts STEMI <12 hrs
 and any of: SBP <100,
 HR>100, Killip 2-3 or
 RVMI rx'd with Tenecteplase
 (R)→routine or
 rescue based angio/PCI
 Concomitant rx:
 ASA +/- Clopidogrel;
 UF or LMWH
 1° endpoint: death, re-MI,
 rec ischemia, CHF,
 CGS @30 days

Time from Randomization to Cardiac Catherization, (hr)



Cumulative Incidence Primary End Point



	N at risk						
Standard	522	442	434	434	433	433	432
Early PCI	537	488	486	483	481	480	478

Intervention After Fibrinolysis

GRACIA I

500 Patients

0.5-12 hrs of sx

ST elevation in ≥ 2 leads

Excluded: shock or pressor dependency

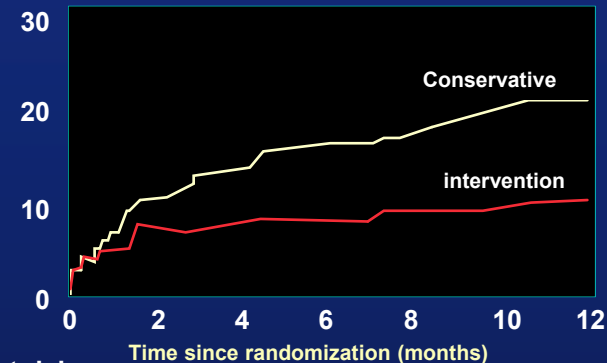
Randomized to either routine cath \pm PCI within 24 hrs or

Ischemia only driven cath (20% crossover)

1° end pt: death, MI or ischemia reg revasc at 12 months

Fernandez-Aviles Lancet '04

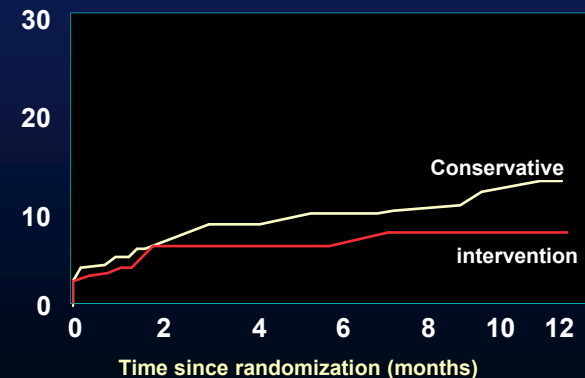
Probability of death, non-fatal reinfarction, or ischemia-driven revascularization



Number at risk

	0	2	4	6	8	10	12
Intervention	248	230	228	226	223	222	221
Conservative	251	225	217	211	208	202	195

Probability of death, non-fatal reinfarction

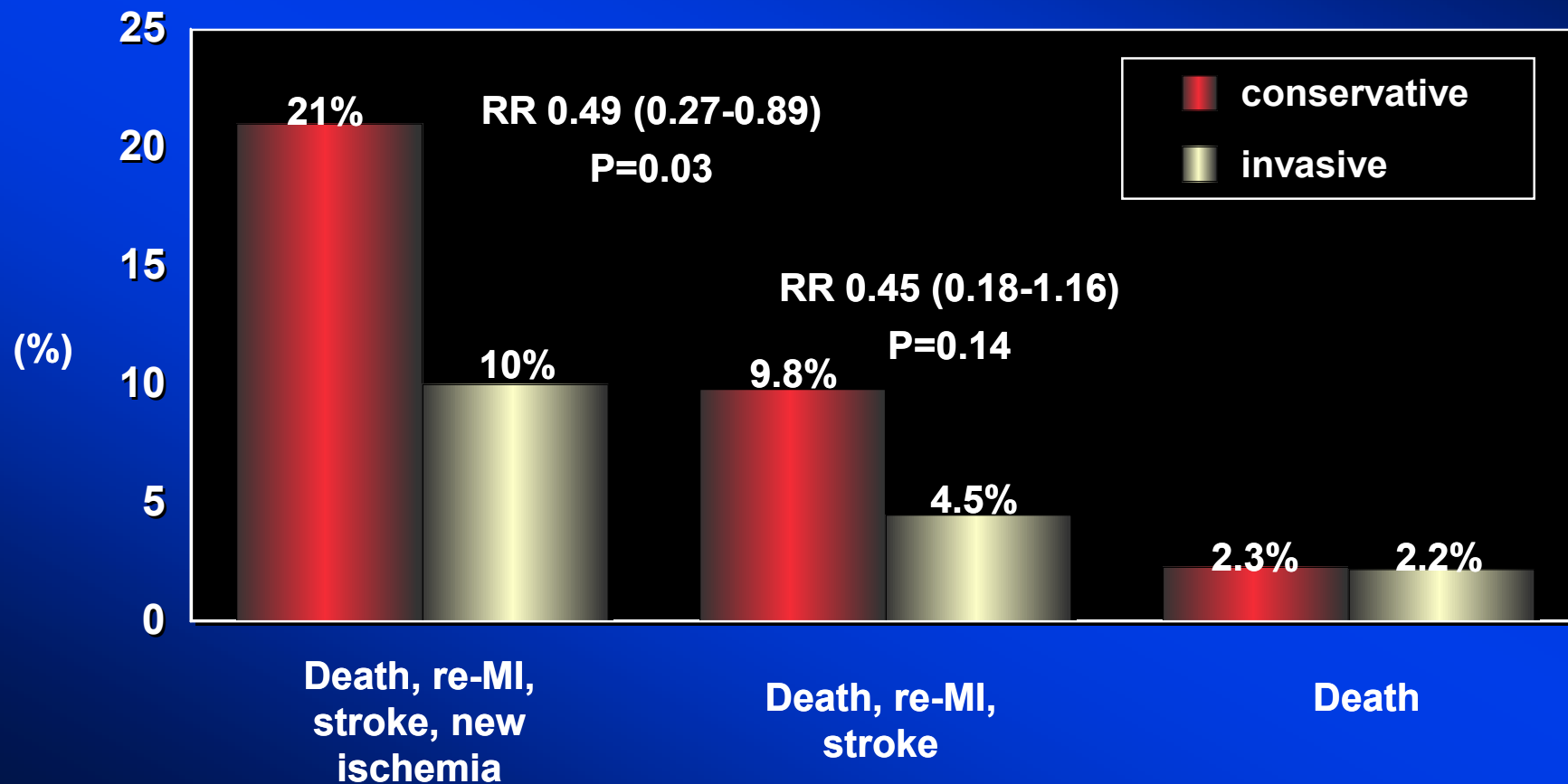


Number at risk

	0	2	4	6	8	10	12
Intervention	248	236	235	232	229	228	227
Conservative	251	235	230	226	225	221	217

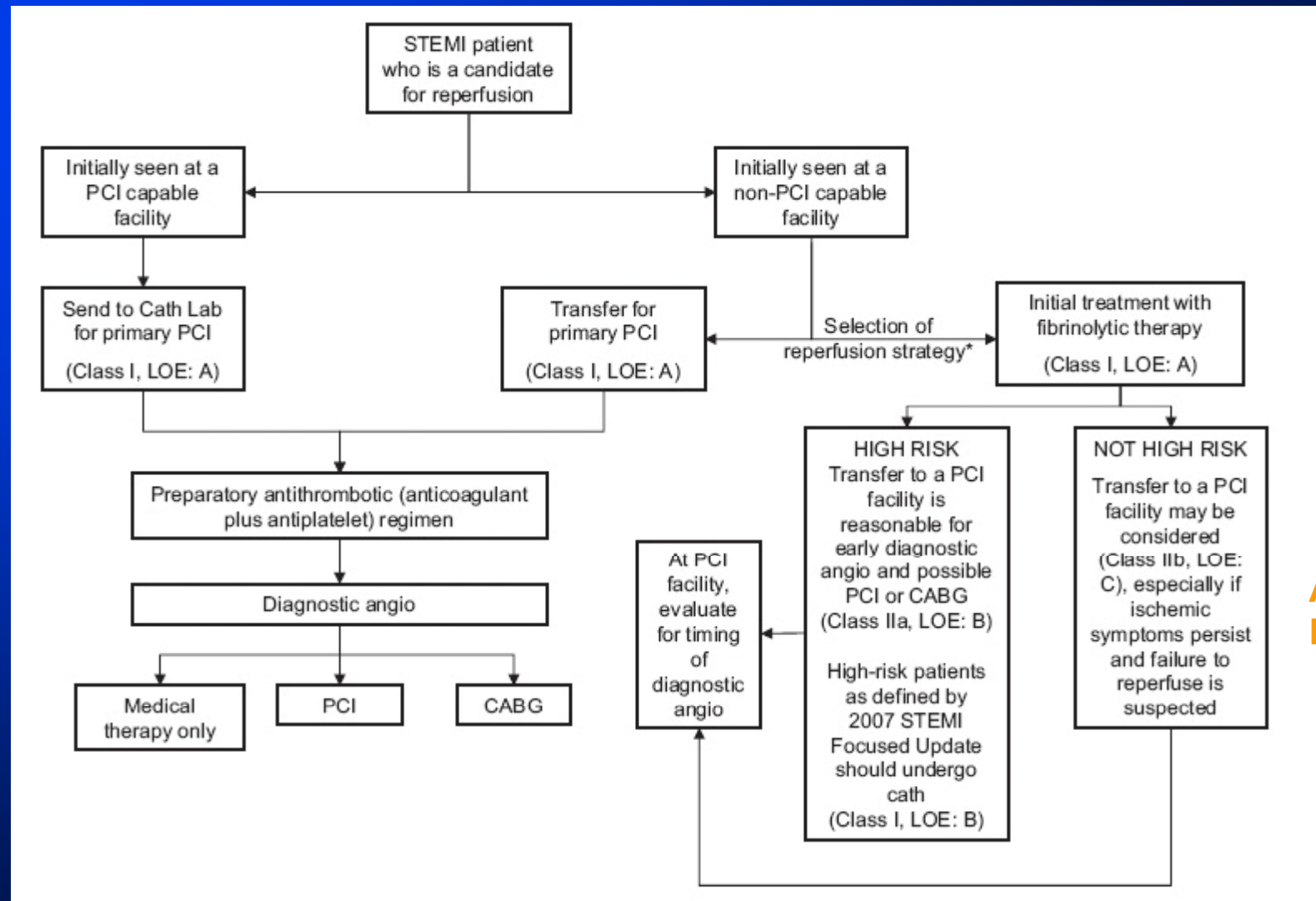
Clinical Outcome at 30 Days

NORDISTEMI



Bohmer E. JACC 55:102, 2010 n=266 patients > 90 min from FMC->PCI, rx'd with tenecteplase (not selected for high risk) Invasive- PCI (89%) 163 min, Cons (71%) 3 days after TNK

2009 ACC Guidelines: Triage and Transfer for PCI



All but very Low risk

STEMI: Summary + Conclusions

- PCI trumps primary lytics except
sx < 90 min if lytics given quickly (ambulance)
very long transfer times (time depends on
patient risk profile)
- No role for routine facilitated PCI
- If lytics are given, moderate and high risk patients
should be transferred for cath/PCI immediately =>
“pharmaco-invasive strategy” with adequate anti-
platelet therapy
- DAP with prasugrel (except when contraindicated),
early BB, ACE-I, statins are also important

STEMI Triage for Non Cath Lab Hospitals

Final Word

- **Have protocol for patient transfer in good weather and bad (eg helicopter, ground transport) worked out with receiving hospital(s)**
- **Post triage protocol in the ED**
 - **should be relatively simple**
 - **should include drugs (minimize iv drips, favor drug that can be given iv push)**
- **Post contraindications to lytics also**