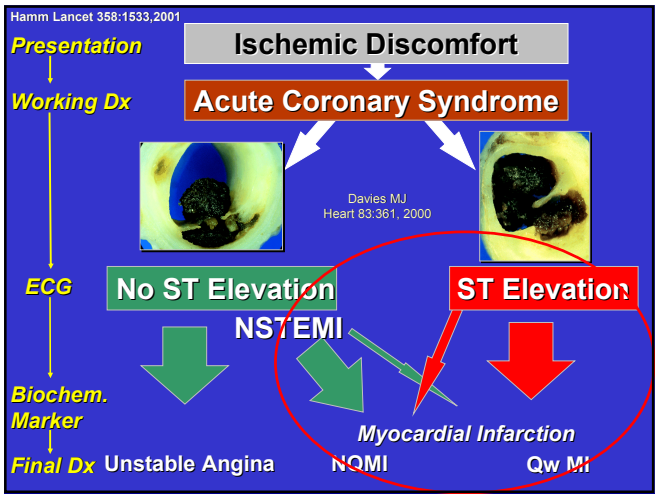


ST ELEVATION MYOCARDIAL INFARCTION

Doron Zahger, MD
Dept. of Cardiology, Soroka University Medical Center
Faculty of Health Sciences, Ben Gurion University of the Negev

DESIRED PROPERTIES OF NEW LYTIC AGENTS

- Faster, more complete, recanalization
- Less reocclusion
- Reduced bleeding risk
- ? Fibrin specificity
- Bolus administration
- Resistance to inhibitors (PAI-1)
- No immunogenicity
- Reduced cost

MAIN TOPICS

- Thrombolytic therapy
- Adjuncts to lysis
- Time to treatment
- Thrombolysis vs. angioplasty
- Transfer to PCI
- Adjuncts to primary PCI
- The approach to reperfusion
- Guidelines – based pharmacotherapy

ASSENT - II

- 16,950 patients admitted within 6h.
- TNK-tPA bolus Vs front loaded tPA.
- 30d and 1 year follow up.

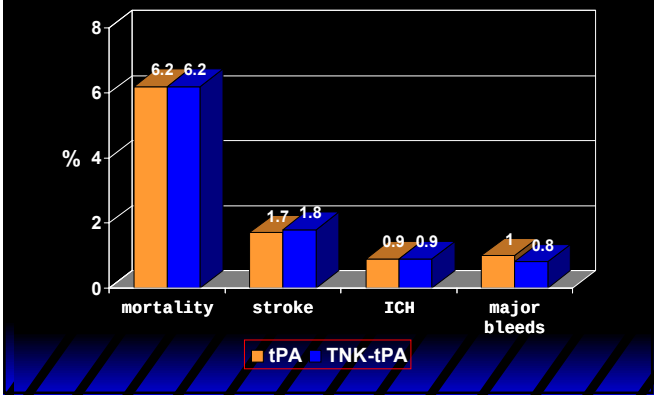
TNK-tPA

- A mutant of native t-PA with:
- Longer half life - bolus administration
- Increased fibrin specificity
- Resistance to PAI-1

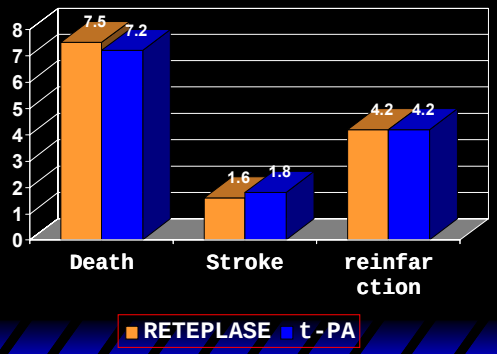
RETEPLASE (r-PA)

- Deletion mutant of t-PA.
- Prolonged plasma clearance, double half life - bolus administration
- Less fibrin specific

ASSENT-II



GUSTO III



GUSTO III

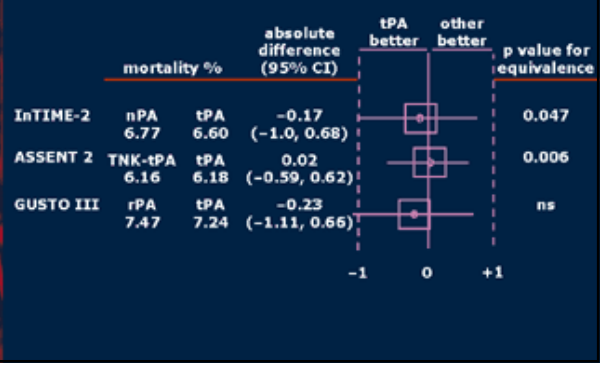
15,059 patients, ST↑ AMI < 6h

2 : 1

Double bolus reteplase — front loaded t-PA

30 day mortality

Comparison among equivalency analyses for 30-day mortality



STAPHYLOKINASE

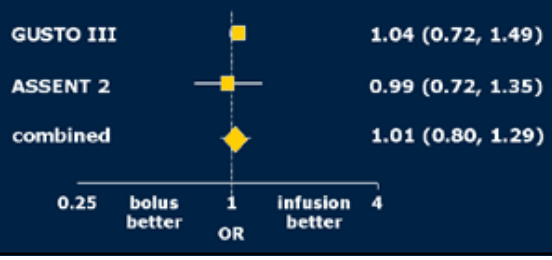
- Produced from transduced Staph. Aureus
- Readily inhibited by alpha-2 antiplasmin in plasma; hence - very fibrin specific
- When given as a double bolus (15 mg each 30 min apart), TIMI 3 flow achieved in 68%.
- Neutralizing antibodies produced.
- At least equivalent to t-PA

Deficiencies of current fibrinolytic regimens for STEMI

- Suboptimal macroperfusion
  - ± 60% TIMI grade 3 flow at 90 min
- Inadequate microperfusion
  - Impaired tissue flow in > 50% of pts with TIMI grade 3 flow
- High rates of reocclusion
  - Inhospital reinfarction ± 4%
- High rates of ICH
  - 0.5 – 1.0%
  - Angiographically proven reocclusion ± 25% at 3 months

Risk of ICH with bolus vs infusion lytic therapy: a meta-analysis

	rPA or TNK-tPA	vs	t-PA
GUSTO III	92/10138		43/4921
ASSENT 2	79/8461		80/8488



LMWH and fibrinolysis

reocclusion TIMI 3 → 0,1	HART-II	3.1% enoxaparin 9.1% UFH
late patency TIMI 3	ASSENT-Plus	69% dalteparin 63% UFH
	AMI-SK	70% enoxaparin 58% placebo
reinfarction	ASSENT-Plus	0.9% dalteparin 5.2% UFH
	Wilson et al	4.7% enoxaparin 6.6% UFH

UFH post lysis

- Bolus: 60 U/Kg , maximum of 4000U.
- Infusion: 12 U/Kg/h, up to 1000u/h
- aPTT target: 50-70 sec.
- aPTT>70 sec. associated with increased mortality
- After tPA- give 24-48 hours. After SK -?
- Weight adjustment probably reduces bleeding complications

AMI-SK

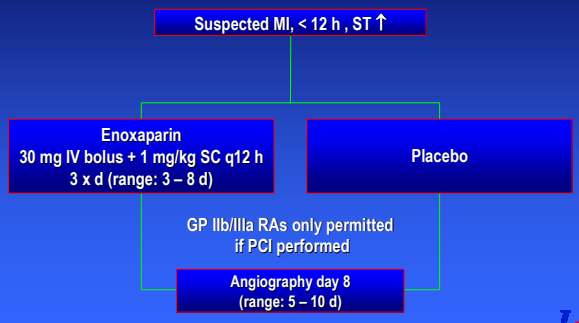
Safety at day 30

	Placebo (n = 239)	Enoxaparin (n = 252)	*P*
Major bleed (%)	2.5	4.8	0.2
ICH (%)	0.4	—	
↓ Hb ≥ 3 g/dL (%)	2.1	4.4	
Transfusion ≥ 2 U (%)	1.3	0.8	
TIMI major bleed (%)	0.8	1.6	
Any stroke (%)	1.3	—	0.1

Simoons M, et al. *Eur Heart J.* 2002;23:1282.

AMI-SK

Study design (2)



Simoons M, et al. *Eur Heart J.* 2002;23:1282.

HART II

Design

STEMI < 12 h (n = 400)

Aspirin and accelerated alteplase

Enoxaparin
30 mg IV bolus + 1 mg/kg SC q12 h
x ≥ 72 h

UFH
5,000 IU bolus + 15 IU/kg/h IV infusion x ≥ 72 h (adjusted to aPTT)

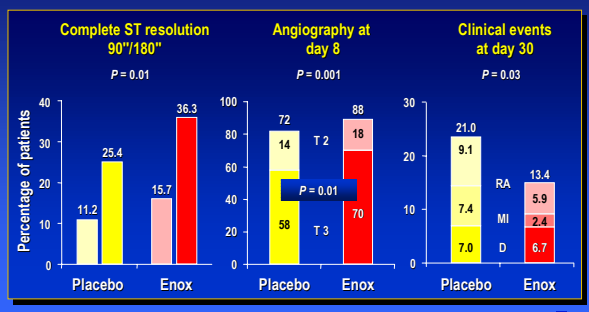
Angiography at 90 min

Repeat angiography at 5 – 7 days

Ross A, et al. *Circulation*. 2001;104:648.

AMI-SK

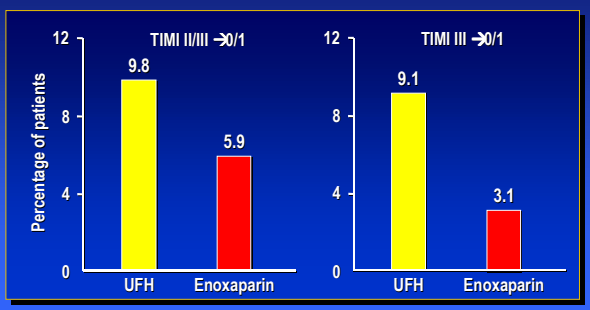
Efficacy



Simoons M, et al. *Eur Heart J*. 2002;23:1282.

HART II

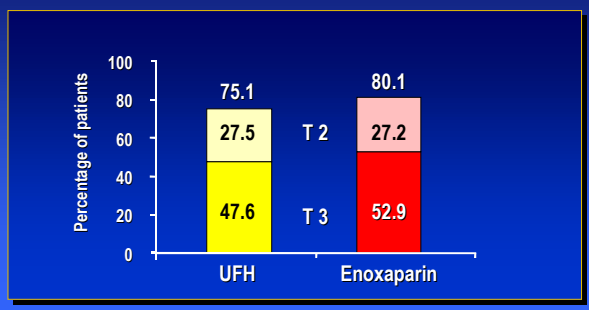
Reocclusion within 1 week



Ross A, et al. *Circulation*. 2001;104:648.

HART II

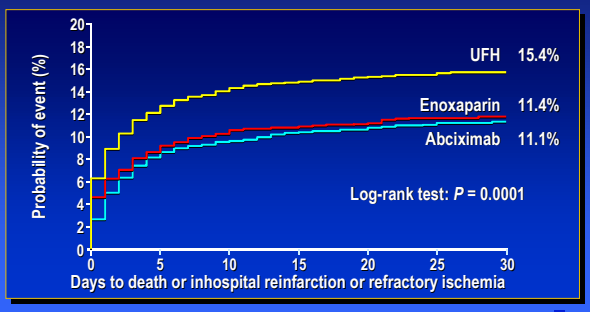
Infarct artery patency at 90 minutes



Ross A, et al. *Circulation*. 2001;104:648.

ASSENT-3

1º efficacy endpoint



ASSENT-3 Investigators. *Lancet*. 2001;358:605.

ASSENT-3

Design

STEMI < 6 h

Enoxaparin (n = 2,040)	Abciximab (n = 2,017)	UFH (n = 2,038)
Enoxaparin IV bolus	UFH IV bolus	UFH IV bolus
TNK-tPA full-dose IV bolus	Abciximab IV bolus	TNK-tPA full-dose IV bolus
Enoxaparin SC q12 h up to discharge or revascularization (max of 7 d)	TNK-tPA half-dose IV bolus	Weight-adjusted UFH for up to 48 h
	Abciximab IV infusion for 12 h	
	Reduced weight-adjusted UFH for up to 48 h	

ASSENT-3 Investigators. *Lancet*. 2001;358:605.

ASSENT-3

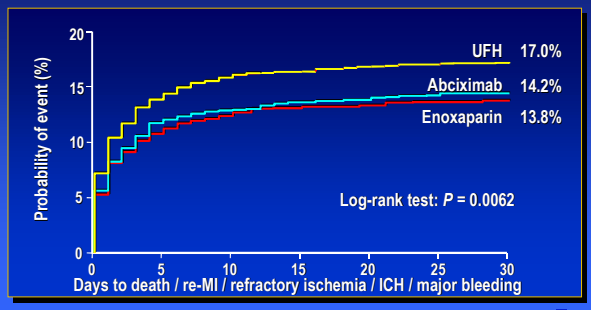
Conclusions (1)

- Both enoxaparin and abciximab, given in conjunction with single bolus TNK-tPA, significantly reduce the frequency of ischemic complications of AMI
- Taking into account efficacy and safety, the ease of administration and the lack of need for monitoring anticoagulation, the combination enoxaparin and TNK-tPA emerged as the best treatment

ASSENT-3 Investigators. *Lancet.* 2001;358:605.

ASSENT-3

1° efficacy plus safety endpoint



ASSENT-3 Investigators. *Lancet.* 2001;358:605.

ExTRACT-TIMI 25

Protocol design

STEMI < 6 h
Lytic eligible

ASA

Lytic choice by MD
(TNK-tPA, tPA, rPA, SK)
Post hoc stratified analysis

Double-blind

Enoxaparin
30 mg IV bolus
1.0 mg/kg SC q 12 h to hosp DC
(0.75 mg/kg q 12 h if ≥ 75 years)

UFH
Bolus 60 U/kg
Infusion 12 U/kg/h x ≥ 48 h

Day 30

1° efficacy endpoint : Death/MI

1° safety endpoint: TIMI major hemorrhage

ASSENT 3 PLUS

- Pre hospital enoxaparin vs. UFH with TNK-tPA
- Overall – similar, but increased bleeding and ICH in patients > 75 with enoxaparin
- Enoxaparin may not be suitable with lysis >75, especially in the pre hospital setting.

Trials of anticoagulant agents

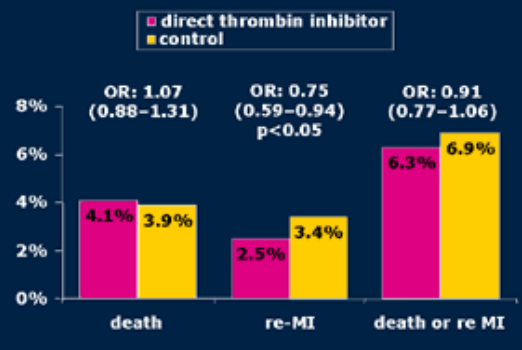
limited (if any) role during initial lysis process
- eg, TAMI-3, GUSTO I

critically important to prevent early reocclusion/re-MI

in comparison with UFH, fewer re-MIs due to
- more complete lysis of thrombus (direct antithrombins)
- less generation of new thrombin (LMWH)
- more stable and prolonged anticoagulant effect (LMWH)

however, no survival benefit but trend towards more bleeding complications

Direct thrombin inhibitors: meta-analysis in ST ↑ ACS (n=35 970)



Direct Thrombin Inhibitor Trialists' Collaborative Group. *Lancet* 2002;359(9303):294-302

ENTIRE-TIMI 23

Design

STEMI < 6 h

ASA

Standard reperfusion: *Full-dose TNK-tPA (0.53 mg/kg)*		Combination reperfusion: *Abciximab + 1/2-dose TNK-tPA (0.27 mg/kg)*	
UFH Bolus: 60 U/kg Infusion: 12 U/kg/h ≥ 36 h	Enoxaparin +/– IV bolus Index hosp (? 8 d)	↓UFH Bolus: 40 U/kg Infusion: 7 U/kg/h ≥ 36 h	↓Enoxaparin +/– IV bolus Index hosp (? 8 d)

1º endpoints: TIMI 3 flow at 60 minutes; TIMI major hemorrhage at 30 d

2º endpoints: ST resolution; ischemic events

Antman EM, et al. *Circulation*. 2002;105:1642.

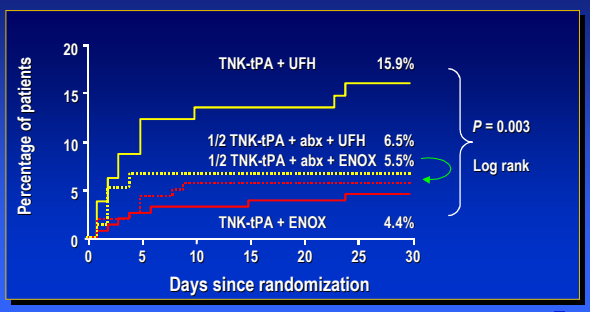
AMI trials involving GP IIb/IIIa antagonists

trials

- combination therapy with fibrinolytic agents
  - full-dose lytic + GP IIb/IIIa: TAMI-8, Impact-AMI, PARADIGM, SK-Eptifibatide
  - reduced-dose lytic + GP IIb/IIIa: TIMI-14, SPEED, INTRO-AMI, FASTER, ENTIRE, INTEGRITI, ASSENT 3, GUSTO V
- PCI trials: GRAPE, RAPPORT, ADMIRAL, CADILLAC, STOP-AMI

ENTIRE-TIMI 23

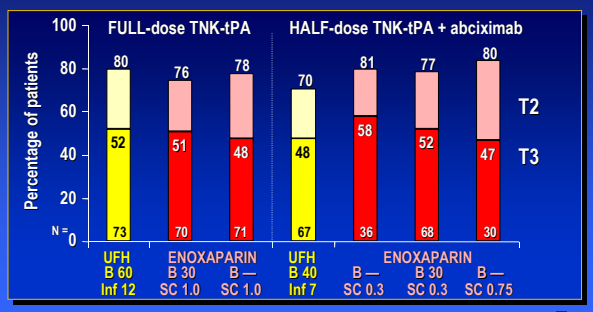
Death/MI to day 30: Time to events



Antman EM, et al. *Circulation*. 2002;105:1642.

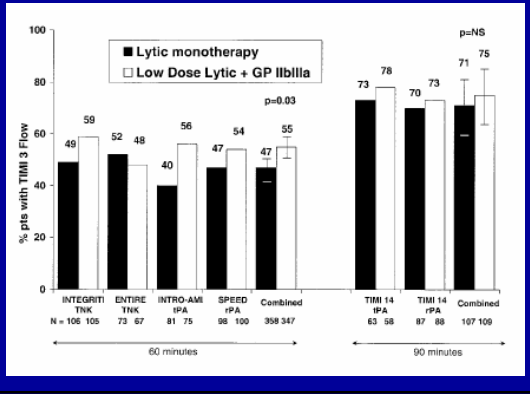
ENTIRE-TIMI 23

TIMI 2 + 3 flow at 60 minutes (n = 415)



Antman EM, et al. *Circulation*. 2002;105:1642.

ANGIOGRAPHIC BENEFIT OF COMBINING LYTICS & IIB/IIIA ANTAGONISTS



ENTIRE-TIMI 23

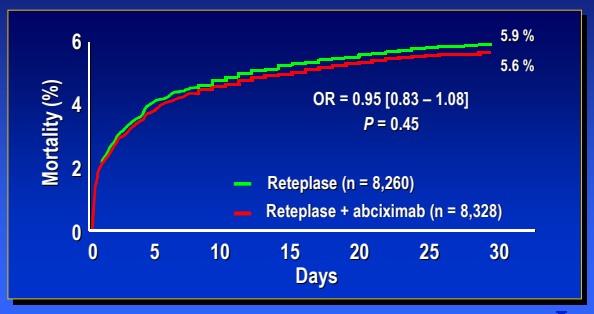
Conclusions

- Enoxaparin and UFH were equally effective in establishing early patency of the IRA
- Enoxaparin was associated with a lower incidence of death/recurrent MI at 30 days
- This advantage of enoxaparin was achieved with a similar risk of major hemorrhage
- Half-dose TNK-tPA + abciximab appears to be associated with an increase in efficacy but at the cost of an increase in major hemorrhage (vs. full-dose TNK-tPA)

Antman EM, et al. *Circulation*. 2002;105:1642.

GUSTO V

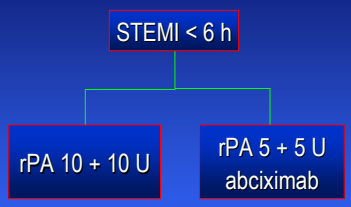
30-day mortality



GUSTO V Investigators. *Lancet*. 2001;357:1905.

GUSTO V

Design

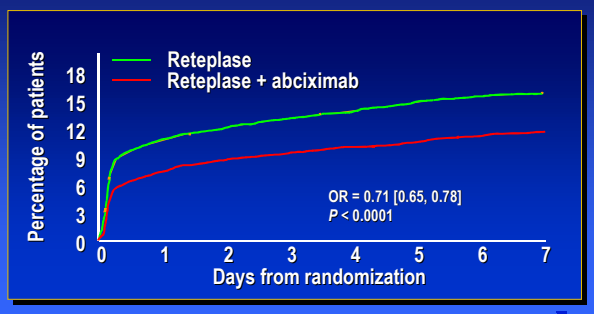


1° endpoint: 30-day mortality (n = 16,588)

GUSTO V Investigators. *Lancet*. 2001;357:1905.

GUSTO V

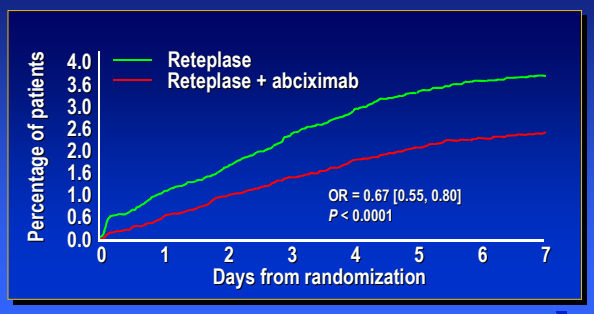
Urgent PCI



GUSTO V Investigators. *Lancet*. 2001;357:1905.

GUSTO V

Reinfarction



GUSTO V Investigators. *Lancet*. 2001;357:1905.

GUSTO V

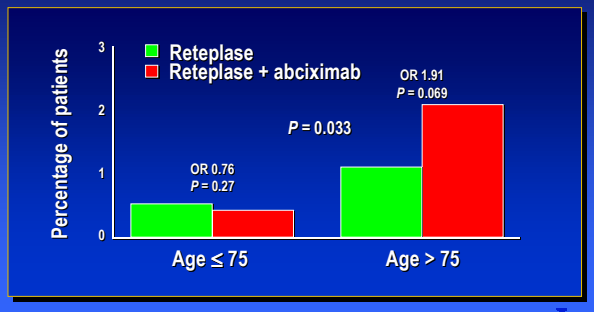
Bleeding complications

	Reteplase (n = 8,260)	Reteplase + abciximab (n = 8,328)	OR (95% CI)	*P* value
	—%	—%		
Severe bleeding	0.5	1.1	2.14 (1.48, 3.09)	< 0.0001
Moderate bleeding	1.8	3.5	1.97 (1.61, 2.41)	< 0.0001
Transfusion (any)	4.0	5.7	1.46 (1.26, 1.69)	< 0.0001
RBC (any)	3.7	5.0	1.38 (1.19, 1.61)	< 0.0001
RBC (≥ 2 units)	2.9	3.9	1.36 (1.14, 1.61)	< 0.0005
Platelets	0.8	1.7	2.03 (1.52, 2.71)	< 0.0001

GUSTO V Investigators. *Lancet*. 2001;357:1905.

GUSTO V

Intracranial hemorrhage by age



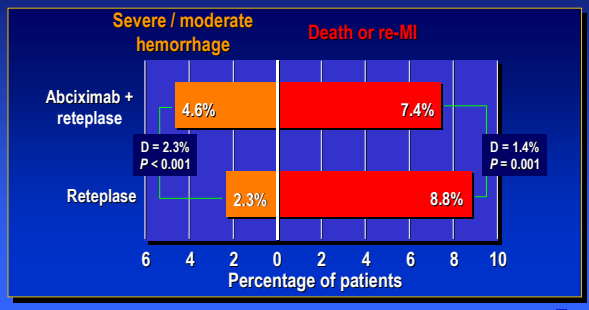
GUSTO V Investigators. *Lancet*. 2001;357:1905.

Trials of IV GP IIb/IIIa antagonists and half-dose lytic

- marginal effect on early IRA patency
- reduced incidence of ischemic complications such as reinfarction and refractory ischemia
- less need for urgent PCI
- more ST segment resolution → better tissue perfusion (?)
- more non-cerebral bleeding complications especially in the elderly

GUSTO V

Benefit vs. risk



GUSTO V Investigators. *Lancet*. 2001;357:1905.

Prehospital fibrinolysis: time saves lives

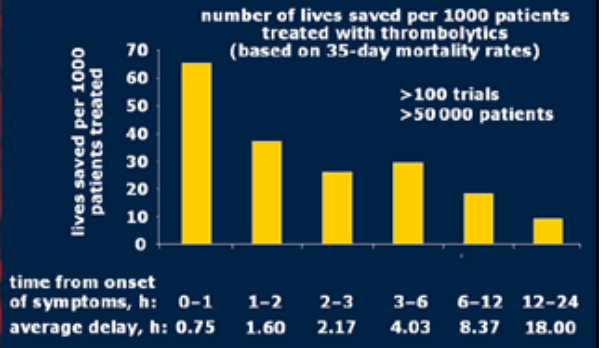
	n	lytic	minutes saved
EMIP	5469	APSAC	55
MITI	360	tPA	33
GREAT	311	APSAC	130
Roth	116	tPA	43
Schofer	78	UA	52
Castaigne	100	APSAC	60
pooled	6434	RR 17%	58

absolute RR 1.7%

p=0.03

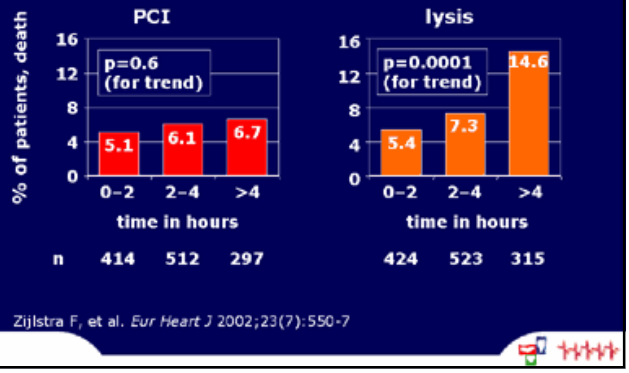
Morrison LJ, et al. *JAMA* 2000;283(20):2686-92

Lessons learned: the importance of time to treatment



Boersma E, et al. *Lancet* 1996;348(9030):771-775.

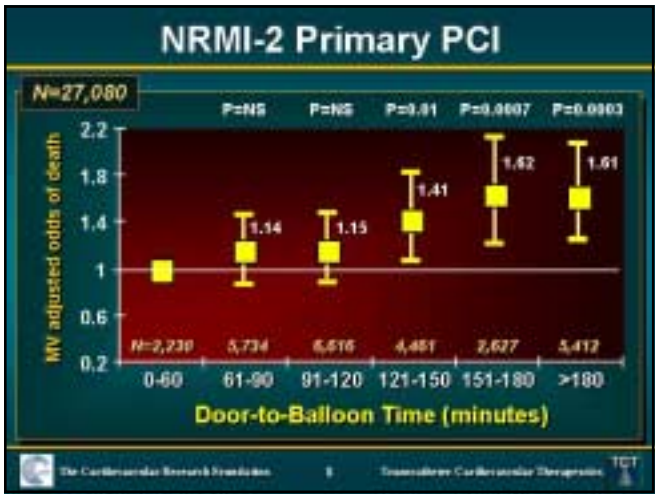
"Time-independent" PCI for MI: meta-analysis of PCI vs lysis trials

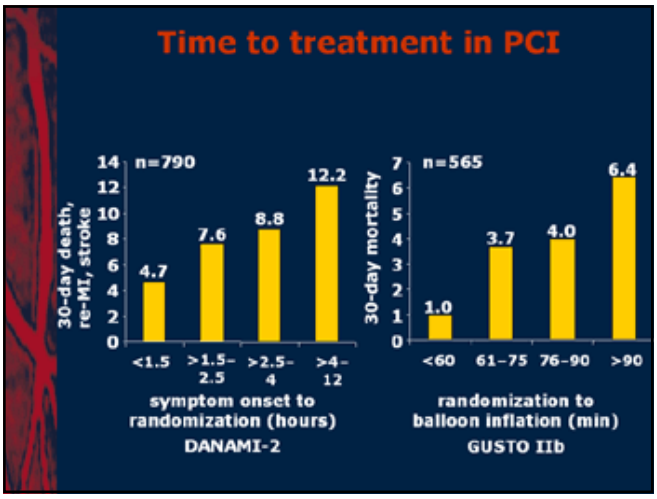


Zijlstra F, et al. *Eur Heart J* 2002;23(7):550-7

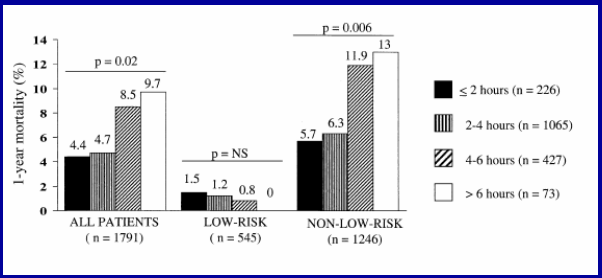
Pre hospital lysis

- Meta analysis of large trials suggests 15-20% reduction in mortality with pre – hospital (vs. hospital based) lysis
- Benefit is maximized during first 2 hours (44% reduction).
- FFT estimate: benefit declines by 1.6 deaths prevented for 1000 patients treated, for every hour of delay.



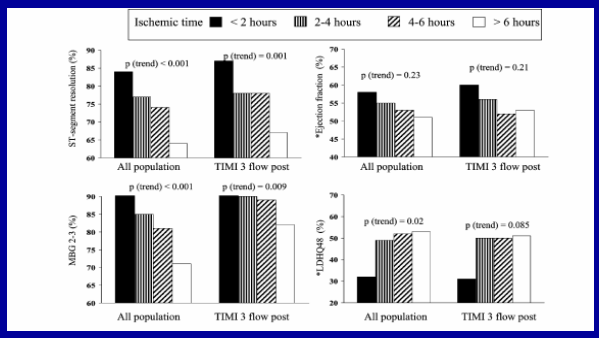


Pain to Balloon: Effect on 1 year mortality (Zwolle)



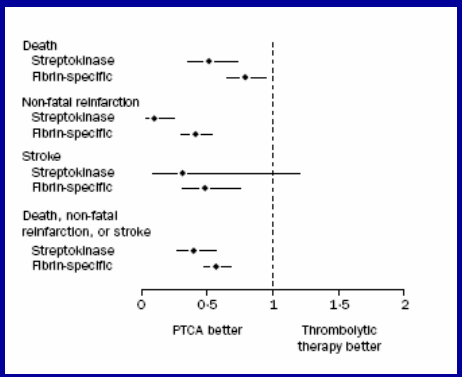
De Luca et al JACC 2003:42:991

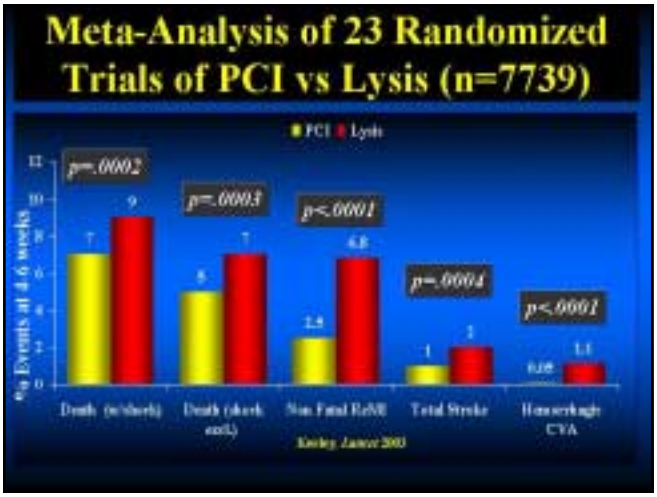
Time to Balloon affects ST resolution



de Luca et al EHJ 2004;25:1009

PCI VS. LYSIS: META – ANALYSIS OF 23 TRIALS





DANAMI-2

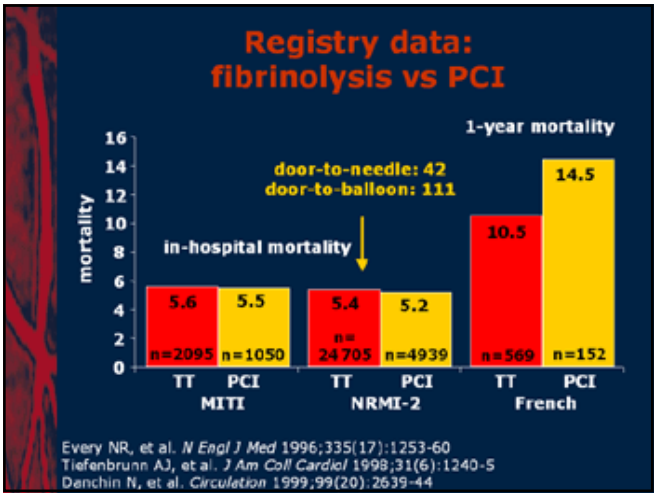
ST- elevation MI

Randomization

Fibrinolysis (100 mg front loaded tPA)

PCI + stent

Registry data: fibrinolysis vs PCI



Every NR, et al. *N Engl J Med* 1996;335(17):1253-60
Tiefenbrunn AJ, et al. *J Am Coll Cardiol* 1998;31(6):1240-5
Danchin N, et al. *Circulation* 1999;99(20):2639-44

DANAMI-2

Referral hospitals

Planned: 1,100 pts.

No transfer

Ambulance transfer

Fibrinolysis (front loaded tPA)

PCI

Incl. 1,129 pts.

Angioplasty centers

Planned: 800 pts.

Fibrinolysis (front loaded tPA)

PCI

443 pts.

DANAMI-2

DENMARK

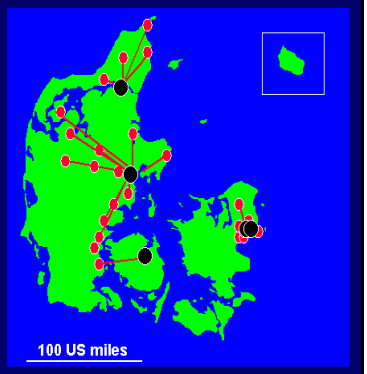
5.4 mill. inhabitants

5 PCI centers

24 referral hospitals

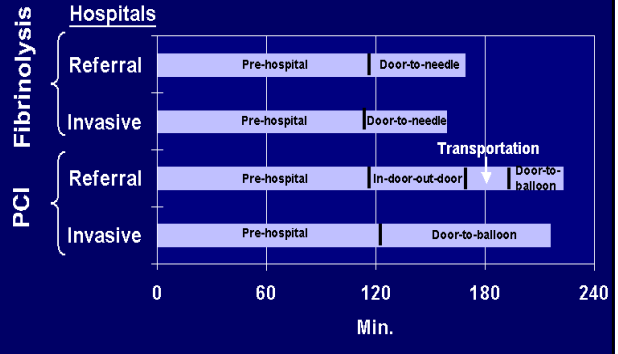
62% of Danish population

Transport distance up to 95 US miles (mean 35 miles)



DANAMI-2

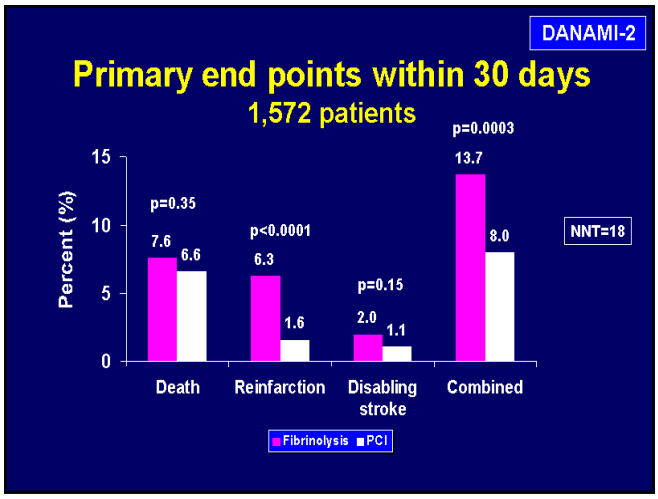
Time from onset of symptoms to treatment (1,572 patients)

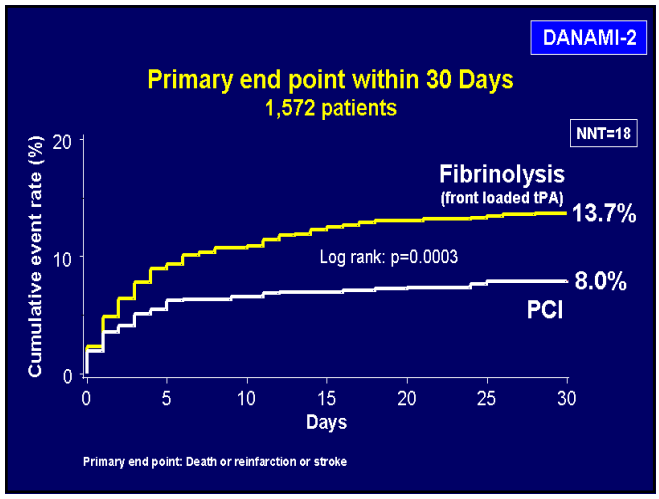


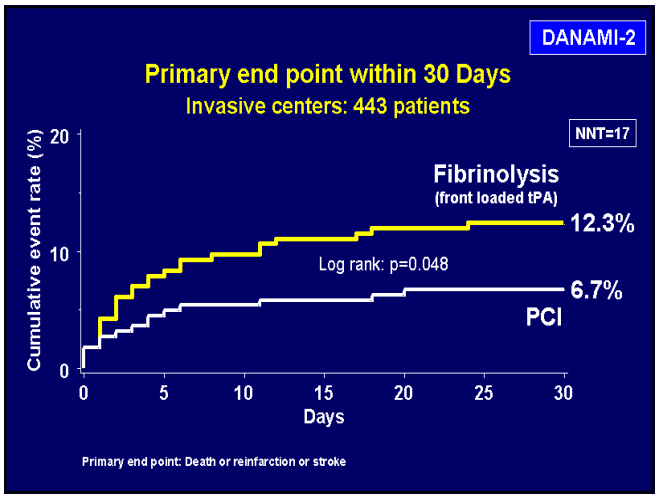
DANAMI-2

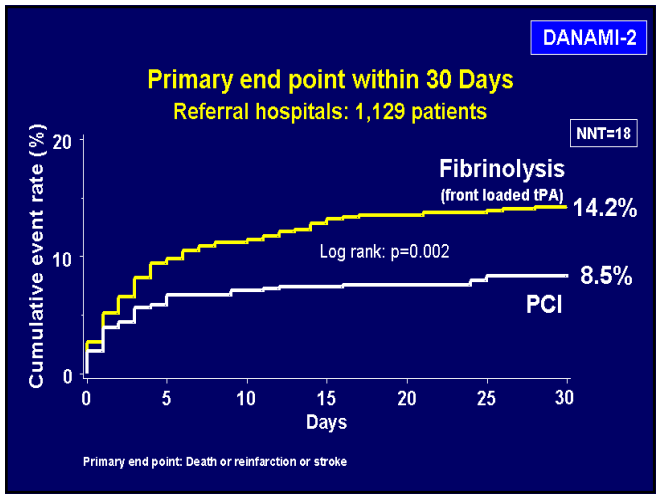
Primary end point

Death or reinfarction or disabling stroke within 30 days









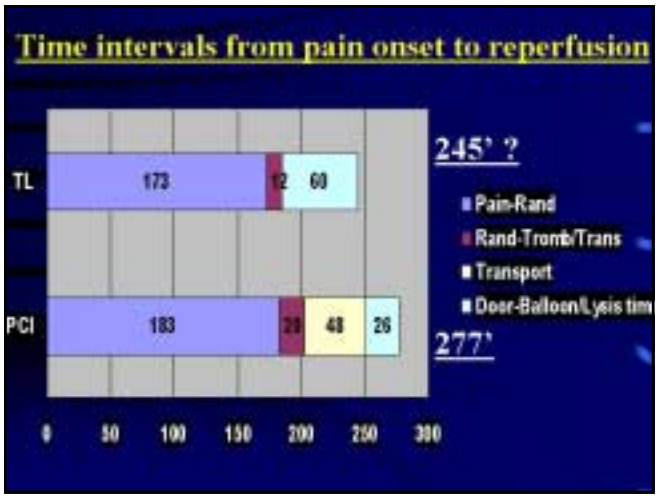
PRAGUE-2 Study aims:

- **Thrombolysis or transport to PCI center** for pts. with AMI presenting to small **community hospitals without cath-lab ?**
- **Mortality trial: Nationwide change of treatment guidelines for AMI in the Czech Republic ?**

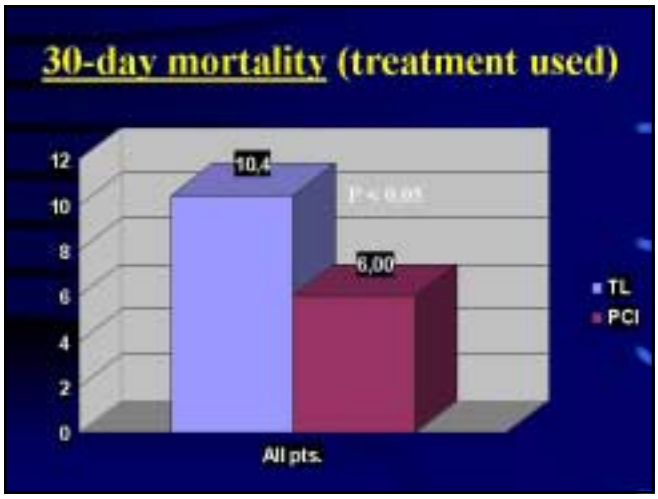
DANAMI-2

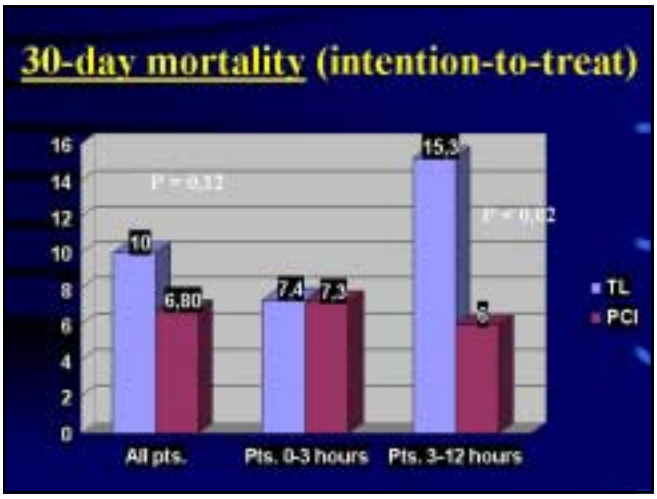
Conclusion

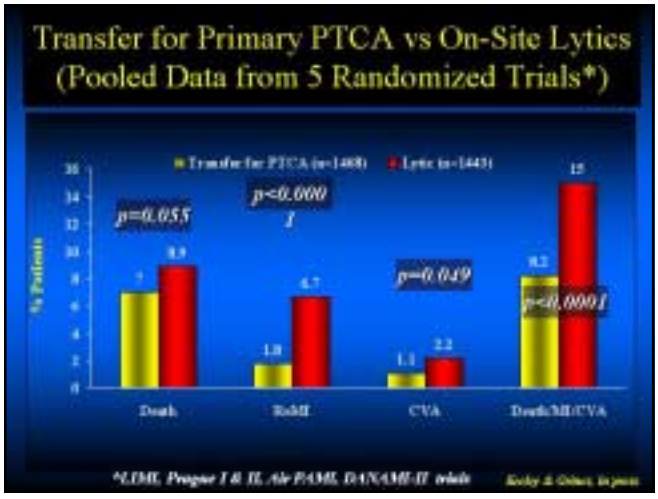
An initial strategy of transferring pts. with ST - elevation MI for primary PCI is superior to accelerated tPA when transfer time is ≤ 3 hours.

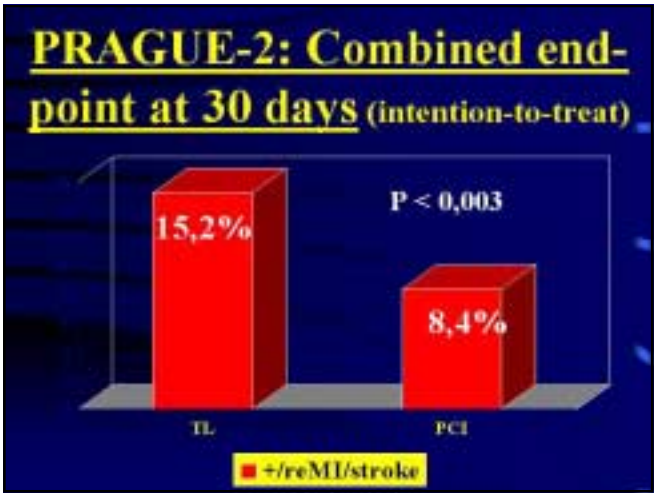

Time intervals from pain onset to reperfusion
TL
PCI
173
12
60
183
28
48
26
245' ?
277'
Pain-Rand
Rand-Tromb/Trans
Transport
Door-Balloon/Lysis tim
0
50
100
150
200
250
300


Treatment arms
Group TL (n=421)
Group PCI (n=429)
Aspegic 0.5 g
SK 1.5 mil. U
Aspegic 0.5 g
Heparin 200 U / kg
Treatment in the community hospital
Transport to PCI center
Ticlopidin 1 m.
Fraxiparin 3 d.
Ticlopidin 1 m.
Fraxiparin 3 d.

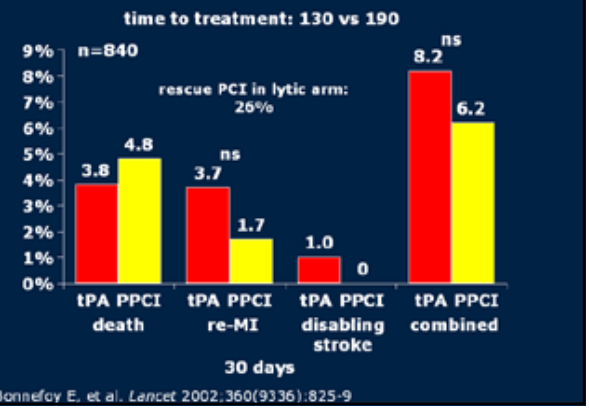

30-day mortality (treatment used)
12
10
8
6
4
2
0
10,4
6,00
All pts.
TL
PCI


30-day mortality (intention-to-treat)
16
14
12
10
8
6
4
2
0
10
6,80
7,4
7,2
15,3
8
All pts.
Pts. 0-3 hours
Pts. 3-12 hours
TL
PCI


Transfer for Primary PTCA vs On-Site Lytics
(Pooled Data from 5 Randomized Trials*)
p=0.055
p<0.0001
p=0.049
p<0.0001
Death
ReMI
CVA
Death/MI/CVA


PRAGUE-2: Combined end-point at 30 days (intention-to-treat)
15,2%
8,4%
P < 0,003
TL
PCI
+/reMI/stroke

CAPTIM primary endpoint



Bonnefoy E, et al. *Lancet* 2002;360(9336):825-9

CAPTIM: comparison of angioplasty and prehospital thrombolysis in AMI

1200 ST elevation AMI patients

randomized, multicentered trial

primary angioplasty

prehospital fibrinolysis

composite endpoint: all-cause mortality, non-fatal recurrent MI, and non-fatal disabling stroke

Bonnefoy E, et al. *Lancet* 2002;360(9336):825-9

GRACIA - 2

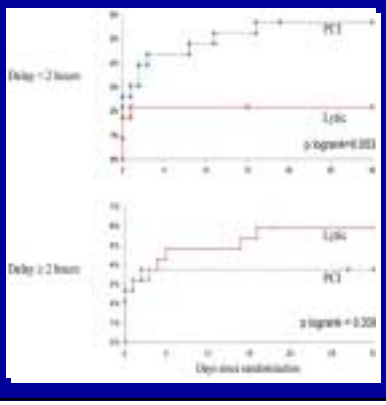
212 STEMI PATIENTS

Primary PCI (stent, Reopro)

TNK-tPA+ Enoxaparin

PCI: 3-12h

CAPTIM: TIME TO TREATMENT AND MORTALITY



CAPITAL AMI

- 170 high risk AMI patients randomized to:
  - TNK lysis alone -> rescue if needed
  - TNK lysis ->routine immediate angiography

GRACIA - 2

- TIMI 3 flow: 59% (lysis) vs. 14%
- ST resolution @ 6h: 61% in TNK arm, 43% in PCI arm
- LV function at 6 weeks, bleeding, MACE – similar
- Conclusion: If immediate PCI not available, lysis followed by systematic angiography & PCI offers similar results with similar safety

CONCLUSIONS

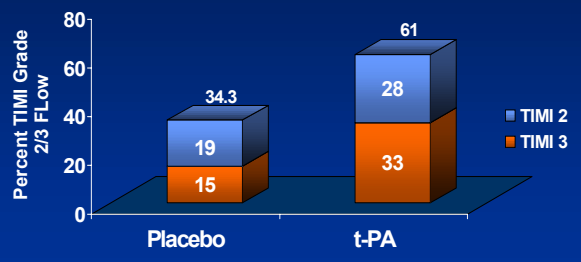
- When transport time does not exceed 60-90 minutes, and a competent team is on standby at the receiving hospital, transfer to PCI is superior to local lysis.
- Pre-hospital lysis is as good as primary PCI, provided "rescue" procedures are available.
- "drip & ship" - a valuable strategy
- Pre hospital "facilitation" - the best?

Major efficacy results in CAPITAL-AMI

End point	Thrombolysis alone	Thrombolysis plus immediate transfer for angiography/ PCI	Significant
Death/MI/stroke/ recurrent ischemia (%)	21.4	9.3	Yes (p=0.034)
Death (%)	3.6	2.3	No
MI (%)	11.9	4.7	No
Stroke (%)	1.2	1.2	No
Recurrent ischemia (%)	17.9	7.0	Yes (p=0.037)

LeMay M. American College of Cardiology 2004 Scientific Sessions; Mar 7-10, 2004; New Orleans, LA.

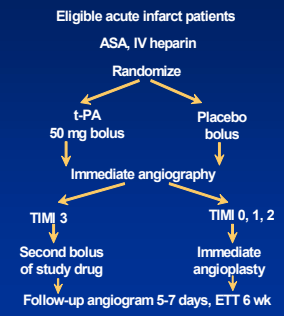
Patency of the Infarct Artery on Catheter Laboratory Arrival (Core Laboratory)



*All comparisons P<0.001.

Ross AM, et al. *J Am Coll Cardiol*. 1999;34:1954-1962.

Plasminogen-Activator Angioplasty Compatibility Trial (PACT)



Ross AM, et al. *J Am Coll Cardiol*. 1999;34:1954-1962.

CADILLAC Trial Design

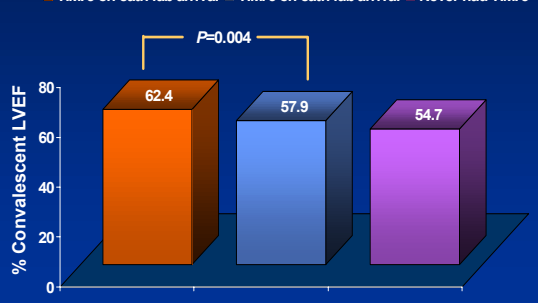
Controlled Abciximab and Device Investigation to Lower Late Angioplasty Combinations
Randomized Comparison in the Setting of Acute MI

Balloon angioplasty (± abciximab) — VS — Stenting (± abciximab)

Inclusion Criteria

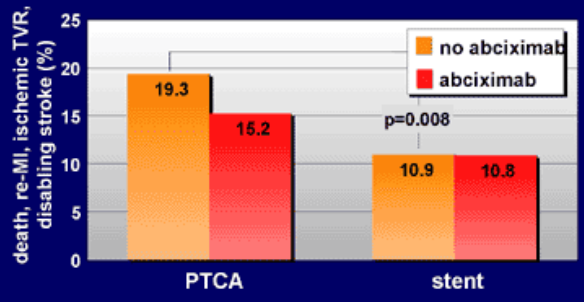
Age > 18 years
Nitrate-unresponsive chest pain consistent with acute MI (duration > 30 min but < 12 hours)
Native coronary artery > 2.5 mm, < 4.0 mm
Lesion length < 70 mm

Convalescent LV Function By Patency Group: Global Ejection Fraction



Adapted from Ross AM, et al. *J Am Coll Cardiol*. 1999;34:1954-1962.

CADILLAC: primary 6-month endpoint



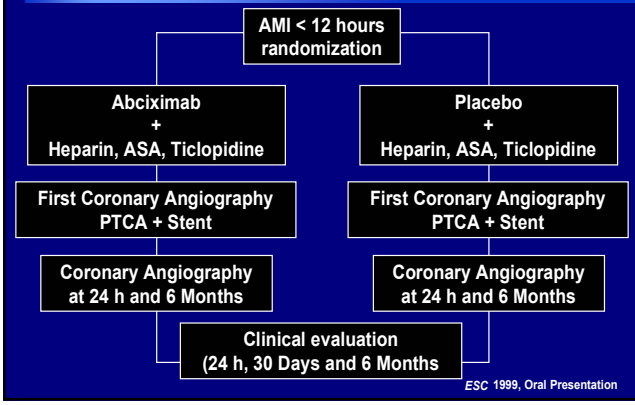
CADILLAC Trial Results

	PTCA[1,3] (n=517)	PTCA + abciximab[2] (n=528)	Stenting[3] (n=511)	Stenting + abciximab (n=525)
TIMI-3 flow	94%	92%	92%	96.7%
Recurrent ischemia	4.5%	1.5%	3.9%	1.2%
Mortality	1.4%	1.0%	1.6%	1.6%
Need for ischemic TVR	2.3%	0.2%	0.8%	0.2%

(1) 19.9% provisional stenting; (2) 15.0% provisional stenting; (3) about 5% crossover to abciximab
Stone GR, et al. Presented at the AHA 72nd Scientific Sessions. November, 1999.

ADMIRAL

Design



ESC 1999, Oral Presentation

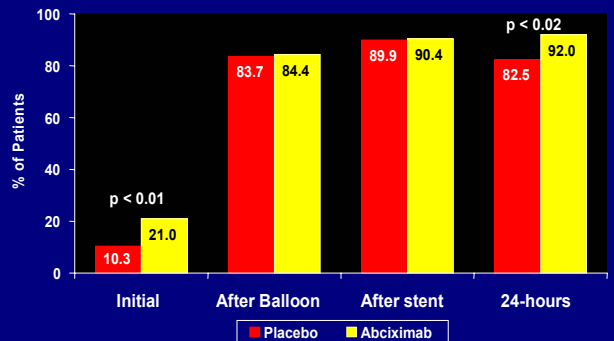
ADMIRAL

ADMIRAL Study

A *Abciximab before*
D *Direct Angioplasty and Stenting in*
M *Myocardial*
I *Infarction*
R *Regarding*
A *Acute and*
L *Long term follow-up*

ADMIRAL

Angiographic Results: TIMI 3 flow rates



ESC 1999, Oral Presentation

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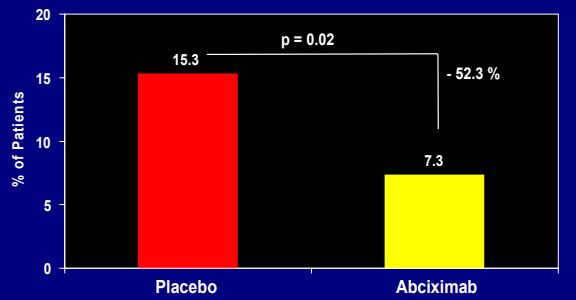
Primary Endpoint (30 days)

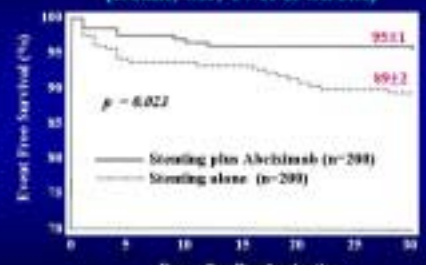
Death, Recurrent MI, Urgent TVR



ESC 1999, Oral Presentation

ACE Trial: Abciximab in AMI

Kaplan-Meier Curves for the Primary End Point (Death, MI, TVR & Stroke)



Antoniucci et al. JACC 2002;42:1879

ADMIRAL

Conclusions

- In patients with acute myocardial infarction, abciximab in conjunction with primary stenting positively improved:
  - early TIMI 3 flow rate
  - left ventricular function
  - 30-day clinical results
- The excess in minor bleeding may be due to the 24-hour arterial sheath

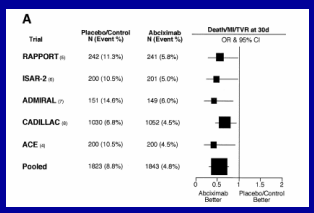
ESC 1999, Oral Presentation

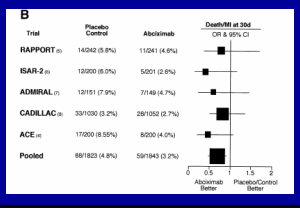
Effect of Pre-Procedural TIMI Flow on Cumulative Late Mortality after Primary PTCA

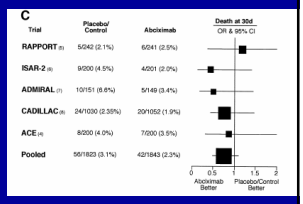
N = 2,507 pts in PAMI-1, PAMI-2, PAMI Stent Pilot and PAMI Stent Randomized

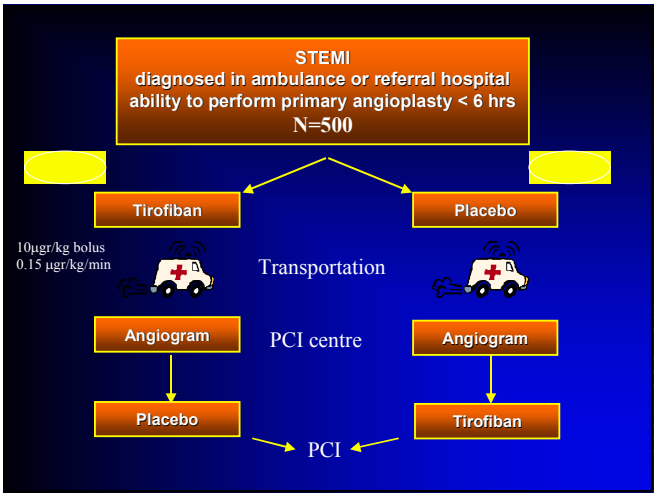
Stone et al. Circulation

Meta analysis of Reopro facilitation trials (Topol)









On-TIME

Ongoing-Tirofiban In Myocardial Infarction Evaluation

24/7 ON-TIME

Flavio Ribichini, ESC 2003

Factors influencing choice of reperfusion strategy

- Risk of evolving MI
- Risk of bleeding
- Time required for performance of PCI by a skilled operator (local or elsewhere)
- Time from symptom onset

TIMI Flow before PCI

Initial Flow	Early (n=243)	Late (n=244)	p
TIMI 0	107 (44%)	143 (59%)	0.01
TIMI 1	32 (13%)	19 (8%)	
TIMI 2	58 (24%)	46 (19%)	
TIMI 3	46 (19%)	36 (15%)	
TIMI 2 or 3	**104 (43%)**	**82 (34%)**	**0.04**
TIMI 3	46 (19%)	36 (15%)	*0.22*

THE APPROACH TO REPERFUSION THERAPY: I – Pre hospital phase

Determine a community policy for STEMI transfer

STEMI < 12h

↓

ASA, UFH

↓

Contact receiving hospital

↓

Decide on destination hospital

PRINCIPLES OF REPERFUSION

- Hospitals should establish a system for administration of reperfusion therapy in the fastest possible way
- The MAXIMAL accepted times are 30 minutes for thrombolysis (Door to needle) and 90 minutes for PPCI (Door to balloon).

THE APPROACH TO REPERFUSION THERAPY: I – Pre hospital phase

Going to PCI center → Consider abciximab, half dose lytic (IIB)

Going to non PCI center

- Delay<20 min → Transfer
- Delay>20 min → Consider pre hospital lysis, especially if pain <3h

THE APPROACH TO REPERFUSION THERAPY: I – Pre hospital phase

Time to PCI center≤ time to non PCI center → PCI center

Time to PCI center > time to non PCI center

- Cardiogenic shock, other very high risk → PCI center
- C/I to lysis → PCI center

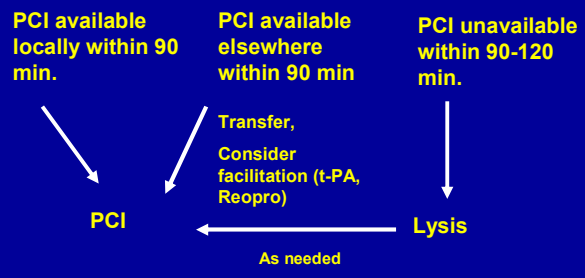
- Expected time to balloon - time to t-PA ≤60 min → Non PCI center
- Not high risk, Expected time to balloon >> time to t-PA → Non PCI center

THE APPROACH TO REPERFUSION THERAPY: II – Additional considerations

- During first 3 hours no general preference of PCI over lysis
- Prefer PCI, even if somewhat delayed, if:
  - Shock or pulmonary edema
  - RV involvement
  - Contraindications to lysis
- Prefer lysis, if PCI available but delayed, during first 3 hours and if :
  - Time to balloon > 90 min

  Time to balloon – time to needle >60min

THE APPROACH TO REPERFUSION THERAPY: II – Hospital phase



THE APPROACH TO REPERFUSION THERAPY: selecting mode of reperfusion

- Class I ACC/AHA & ESC guidelines:
  - Primary PCI should be performed for AMI patients whenever it can be performed within 90 minutes of presentation by an experienced team
  - Thrombolysis should be given to STEMI patients presenting within 12 hours, for whom primary PCI is not available within 90 minutes, in the absence of C/I.

THE APPROACH TO REPERFUSION THERAPY: II – Additional considerations

- If a strategy of thrombolysis is chosen, pre-hospital lysis should be started within 30 minutes of contact if physician/ experienced paramedics present on ambulance, particularly if transfer time > 60 minutes. (ESC Class I, ACC/AHA class IIA)
- If a strategy of PPCI is chosen, consider IIb/IIIa ASAP. Indication for Abciximab stronger than tirofiban, eptifibatide

GUIDELINES - BASED PHARMACOTHERAPY OF STEMI (2)

		ACC/AHA	ESC
LMWH	With lytics	IIb	Possible
	With lytics, age >75 or creat.> 2.0	III	
	Anterior MI, large MI, AF	I	
	No reperfusion, no high risk	IIa, at least 48h	
IIb/IIIa	with PPCI	II	I – POBA IIa - stent
Clopidogrel	Post stenting	I	
	Alternative to ASA post lysis	IIa	No data

GUIDELINES - BASED PHARMACOTHERAPY OF STEMI (1)

		ACC/AHA	ESC
ASA		Class I for all, starting on presentation, indefinitely	
UFH			
	With primary PCI	I	
	With t-PA & variants	I	
	With SK if ant. MI, large MI, AF	I	
	Other SK	IIb	IIa
	No reperfusion	IIa, at least 48h	

GUIDELINES - BASED PHARMACOTHERAPY OF STEMI (4)

		ACC/AHA	ESC
STATINS	Any LDL	I	
	LDL > 115 despite diet		I
FIBRATE/ NIACIN	LDL<100+ HDL <40 or TG>500	I	I if HDL <45 + TG>200
WARFARIN	ASA allergy, AF, LV clot	I	
	With ASA if <75	IIa	

GUIDELINES - BASED PHARMACOTHERAPY OF STEMI (3)

		ACC/AHA	ESC
ß blockers	Early IV	IIa	IIb
	Hospital phase	I	
	Long term, low risk	IIa	I
CCB	Verapamil/diltiazem if ß blockers not tolerated	IIa	II
	With LV dysfunction	III	
ACE - I		I	
	1ST 24h, low risk	IIa	