A photograph of the Houston skyline, including several prominent skyscrapers, viewed from a distance behind a lush green park with trees and a winding river. The sky is clear and blue.

***Critics of Thrombolytics:
Is Pre-Hospital Clot-busting
Actually a Bad Thing?***

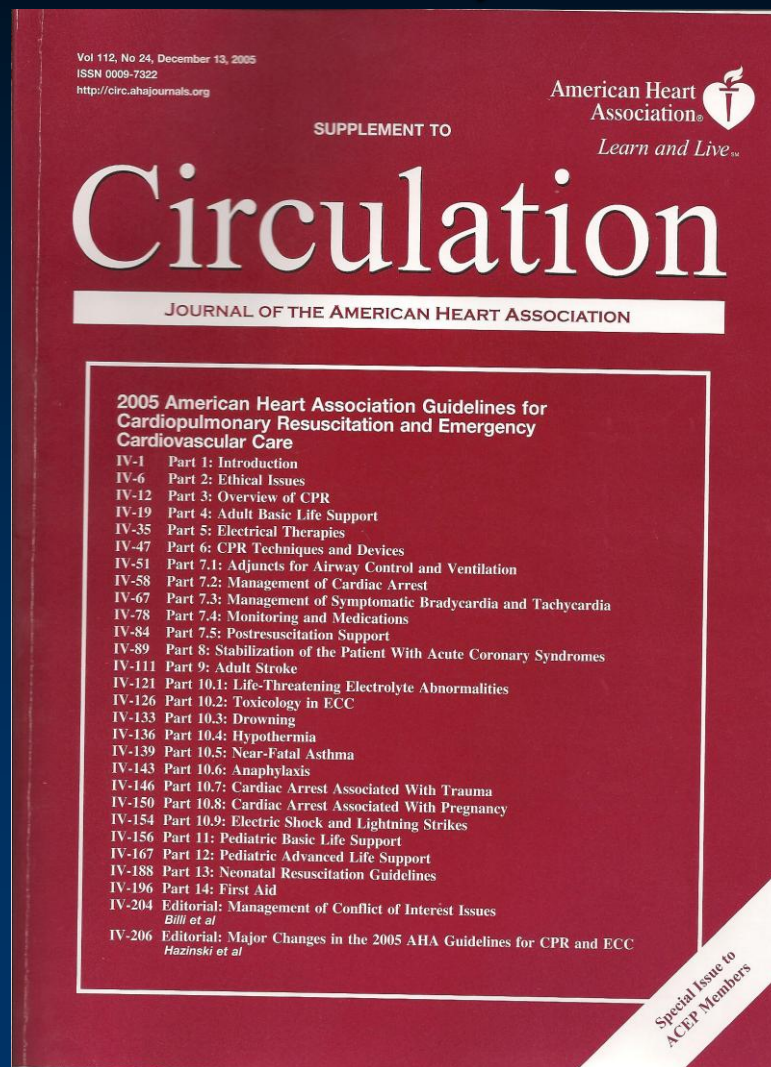
**David Persse, MD
Houston Fire Department
EMS**



STEMI Stuff

- New or Recurrent MI's in U.S.: 865,000
- Acute STEMI's: 500,000
- Sooner Artery is Re-Opened, the Better the Patient Will Do

ACC/AHA Guidelines Dec. 13, 2005





Percutaneous Coronary Intervention “PCI”

- ...recommended initial approach to management of STEMI,
- *Contingent* upon treatment at centers with a skilled PCI laboratory and rapid initiation
- Within 90 minutes *of first medical contact*



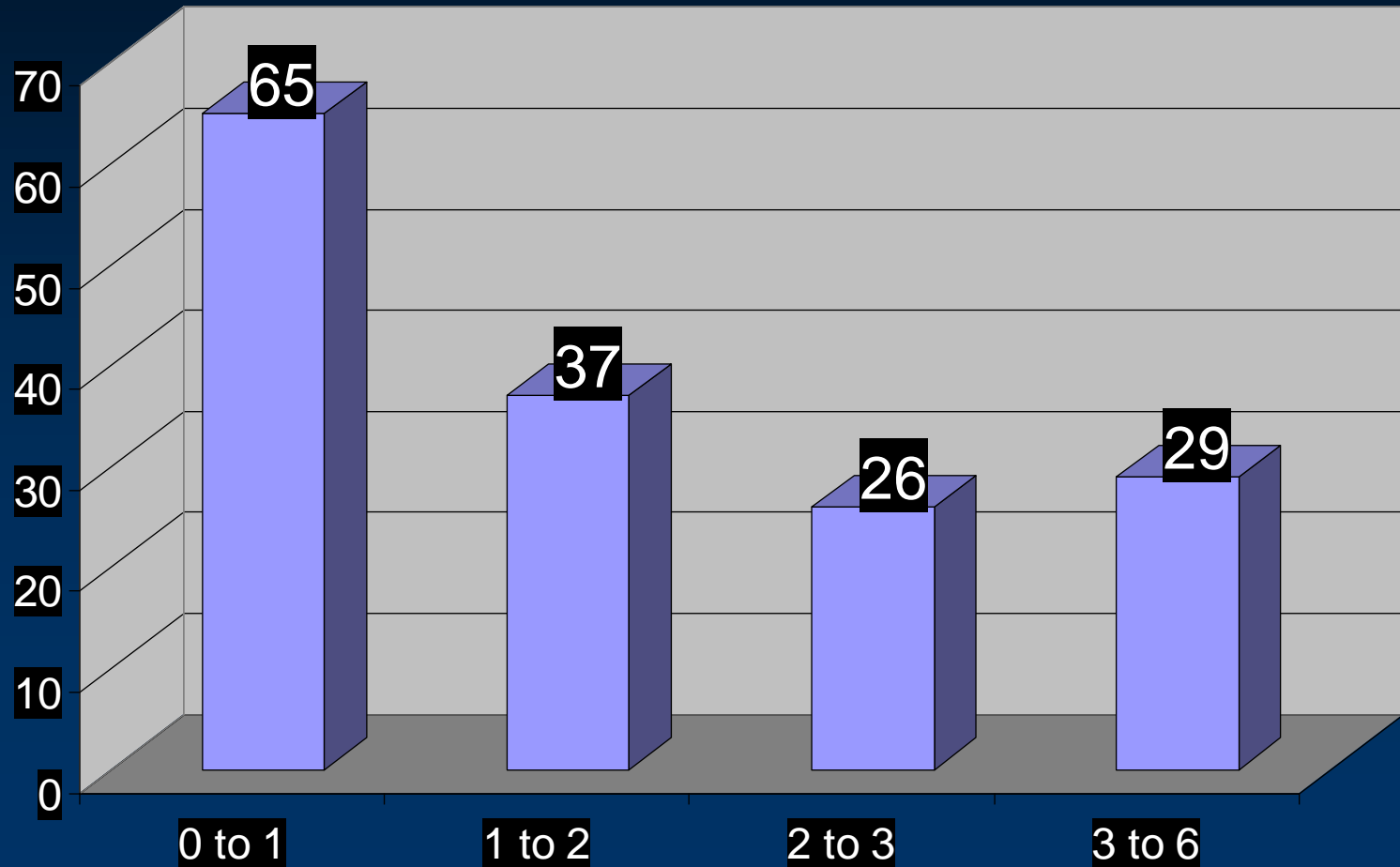
Boersma

- Boersma E, Maas AC, Deckers JW, et al. Early thrombolytic treatment in acute myocardial infarction: reappraisal of the golden hour. *Lancet*. Sep 21 1996;348(9030):771-775.
- 22 trials involving 50,246 patients treated with fibrinolytics v. placebo 35 day mortality



Boersma

Lives Saved per 1,000 w/Fibrinolytics





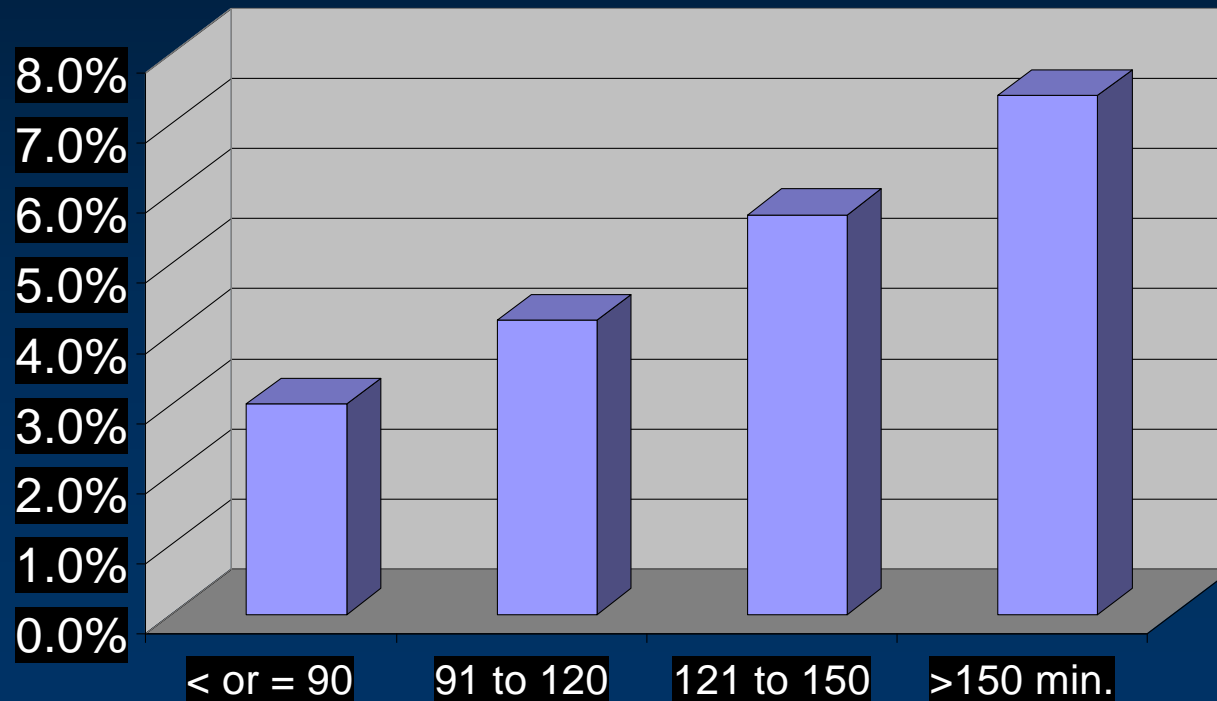
Mc Namara et al.

- Effect of door-to-balloon time on mortality in patients with ST-segment elevation myocardial infarction. J Am Coll Cardiol. 2006 June 6;47(11):2180-6.
- 29,222 patients <6 hours of symptoms, 365 hospitals (NRMI data)



McNamara et al.

STEMI Mortality v. Time with PCI



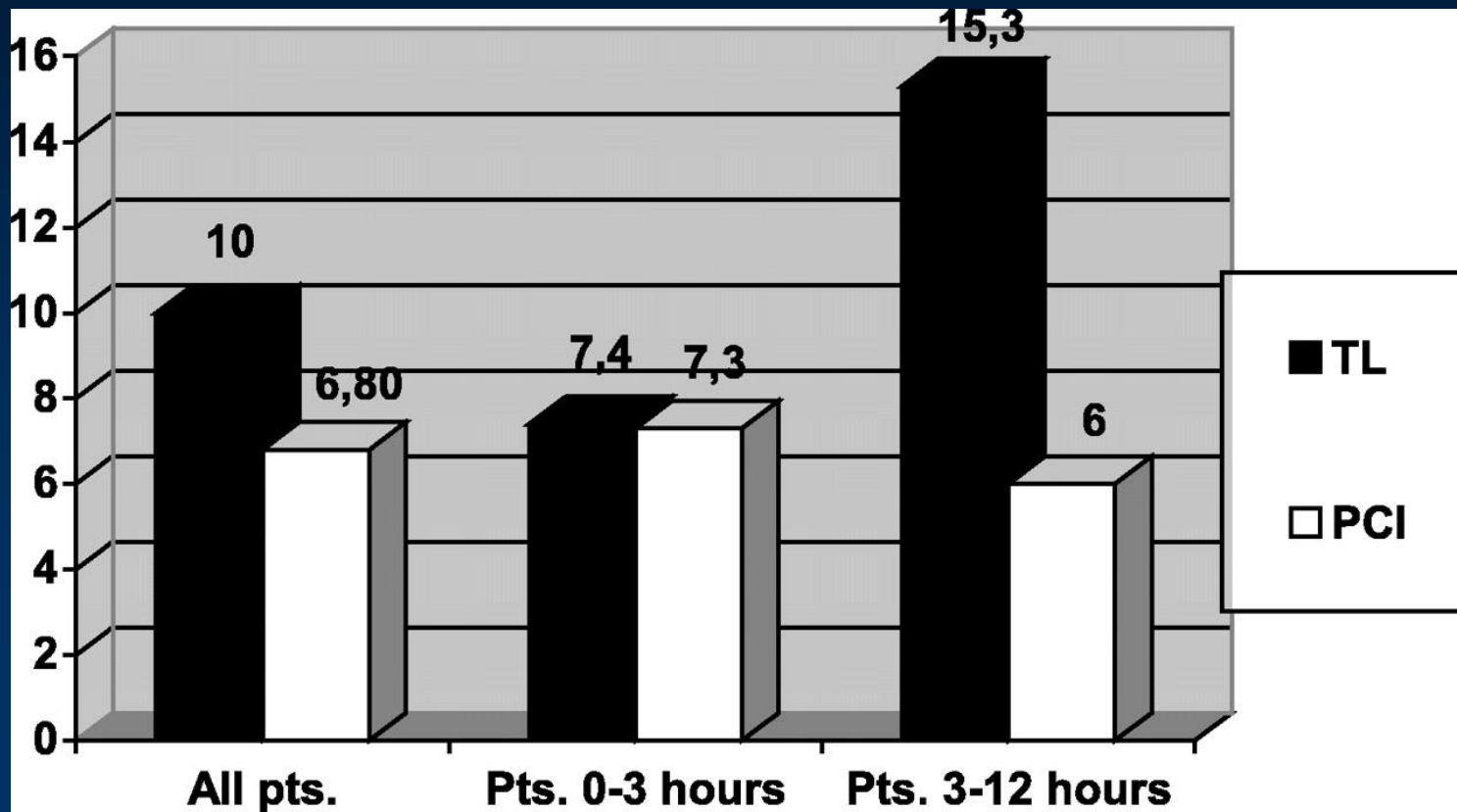


PRAGUE II

- Widimsky P, Budesinsky T, Vorac D et al. Long distance transport for primary angioplasty vs immediate thrombolysis in acute myocardial infarction. Final results of the randomized national multicentre trial –PRAGUE -2. Eur Heart J. Jan 2003;24(1):94-104.
- Community Hospital Fibrinolysis v. Primary Transport to PCI Center



PRAGUE II

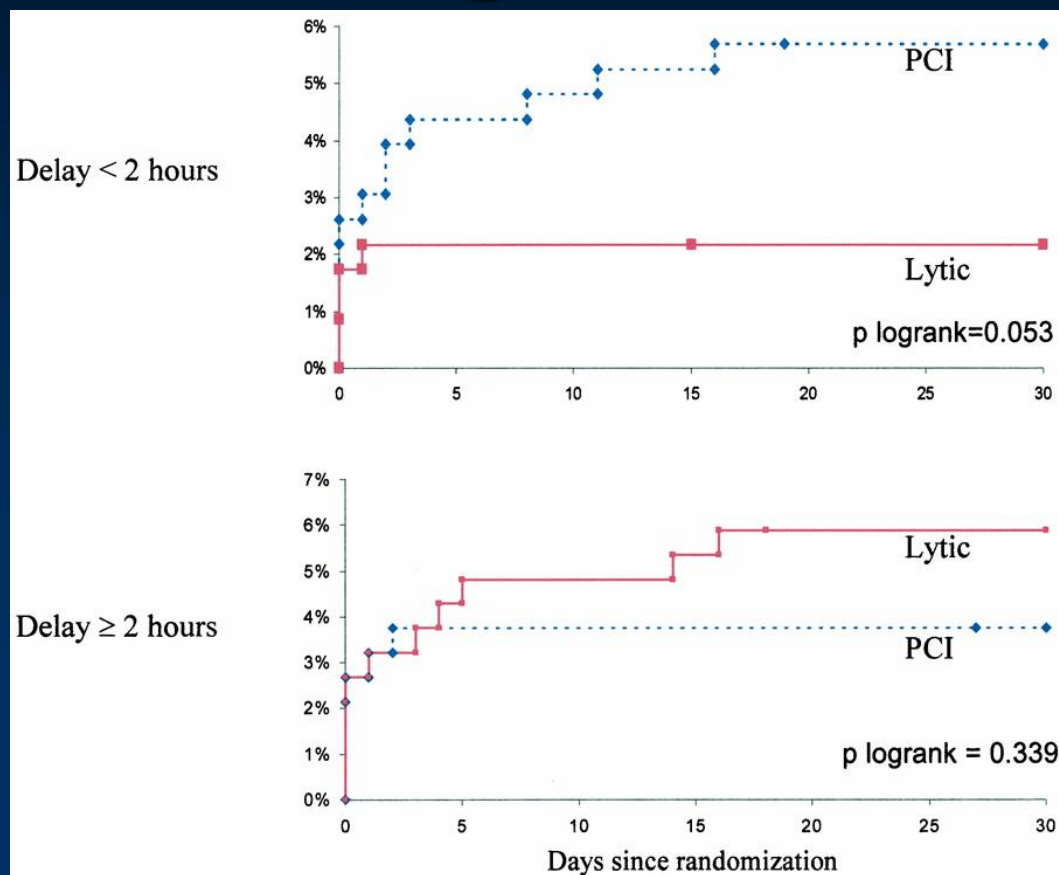


A photograph of a city skyline with various skyscrapers and buildings, viewed from a distance with some greenery in the foreground. The sky is clear and blue.

Prehospital Fibrinolysis Steg et al.

- Steg PG, Bonnefoy E, Chabaud S, et al. Impact of time to treatment on mortality after prehospital fibrinolysis or primary angioplasty: data from the CAPTIM randomized clinical trial. *Circulation*. Dec 9 2003;108(23):2851-2856.
- Randomized trial comparing prehospital thrombolysis with transfer to an interventional facility (and, if needed, percutaneous intervention) with primary percutaneous coronary intervention (PCI) in patients with ST-segment-elevation myocardial infarction (STEMI).
- N=840; TL = 419, 1° PCI = 421

Prehospital Fibrinolysis Steg et al.



Prehospital Fibrinolysis Steg et al.

TABLE 2. Incidence of Primary and Secondary End Points According to Randomized Treatment Assignment and Time Between Symptom Onset and Randomization

	<2 h			≥2 h			<i>P</i> *
	Prehospital Lysis	Primary PCI	<i>P</i>	Prehospital Lysis	Primary PCI	<i>P</i>	
Randomization to treatment, min	95 (40–175)	150 (82–260)	<0.0001	195 (120–570)	258 (150–1275)	<0.0001	...
Primary end point	17 (7.4)	15 (6.6)	0.855	17 (9.1)	11 (5.9)	0.326	0.532
Death	5 (2.2)	13 (5.7)	0.058	11 (5.9)	7 (3.7)	0.470	0.039
Reinfarction	9 (4.0)	3 (1.4)	0.141	6 (3.4)	4 (2.2)	0.540	0.483
Disabling stroke	3 (1.3)	0 (0.0)	0.249	1 (0.6)	0 (0.0)	0.494	...
Secondary end points							
Recurrent ischemia	16 (7.1)	11 (5.1)	0.430	13 (7.4)	5 (2.8)	0.055	0.315
Severe hemorrhage	1 (0.4)	0 (0.0)	1.000	1 (0.6)	8 (4.4)	0.037	0.038
Cardiogenic shock (from randomization to discharge)	3 (1.3)	12 (5.3)	0.032	7 (3.9)	8 (4.4)	1.000	0.113
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Values are number of patients (%) or median (interquartile range; 25th and 75th percentiles).

**P* for heterogeneity.

55 Minute Treatment Advantage for PL

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26% Rescue PCI, 33% by day 30

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Stone et al.

- Normal flow (TIMI-3) before mechanical reperfusion therapy is an independent determinant of survival in acute myocardial infarction: analysis from the primary angioplasty in myocardial infarction trials. *Circulation*. Aug 7 2001;104(6):636-641.
- TIMI Blood Flow v. 6-Month Mortality

3	0.5%
2	2.8%
0 – 1	4.4%



CAPTIM

- Bonnefoy E, Lapostolle F, Leizorovicz A, et al. Primary angioplasty versus prehospital fibrinolysis in acute myocardial infarction: a randomized study. *Lancet* Sep 14 2002;360(9336):825-829.
- Randomized multi-center trial of 840 patients (of 1200 planned) who presented within 6 h of acute myocardial infarction with ST-segment elevation, assigned to prehospital fibrinolysis (n=419) or primary angioplasty (n=421).
- Primary endpoint was a composite of death, non-fatal re-infarction, and non-fatal disabling stroke within 30 days



CAPTIM

	Prehospital Fibrinolysis (n=419)	Primary PCI (n=421)	p-value
Composite Endpoint	8.2%	6.2%	0.29
Death	3.8%	4.8%	0.61
Re-infarction	3.7%	1.7%	0.13
Disabling Stroke	1.0%	0	0.12

***26% “Rescue Angioplasty” in Prehospital Fibrinolysis
v. 1.7% in Primary PCI group**

**** < 2 hours: 30 – day mortality 2.2% prehospital fibrinolytics
v. 5.7% primary PCI (p = 0.058)**



ASSENT - 4

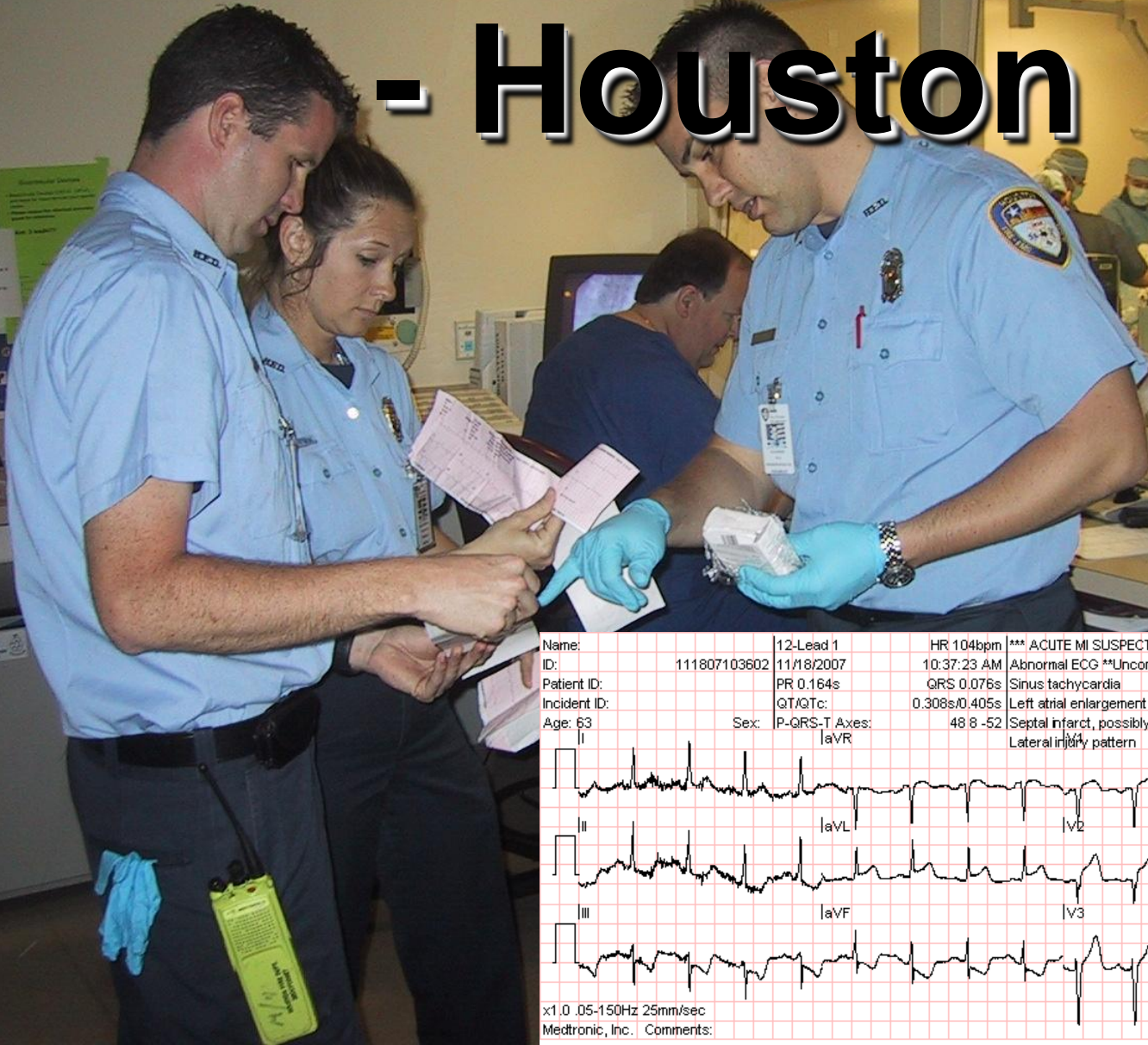
- Primary versus tenecteplase-facilitated percutaneous coronary intervention in patients with ST-segment elevation acute myocardial infarction (ASSENT-4 PCI): randomized trial. Lancet. Feb 18 2006;367(9510):569-578.
- STEMI's < 6 hrs. to PCI (n = 838) or lytic + PCI (n = 829)



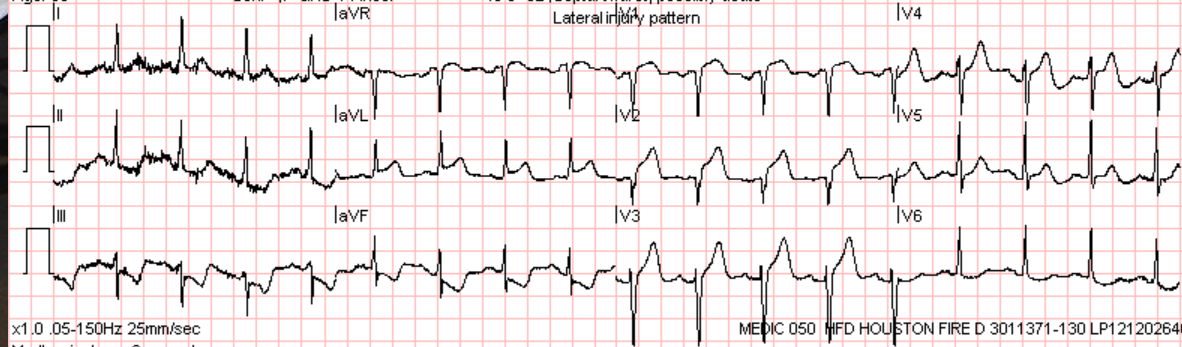
ASSENT - 4

- **DSMB Stopped Study Early**
 - 6% mortality v. 3% in 1° PCI, ($p = 0.01$)
 - Primary endpoint: 19% v. 13% in 1° PCI ($p = 0.004$)
 - Strokes: 1.8% v. 0% ($p < 0.001$)
- **Symptom Onset to Lytic: 153 minutes**
- **20% treated in Ambulance**
 - ** Mortality: 3.1% v. 4.1% in 1° PCI ($p = 0.74$)
 - All treated within 2 hours of symptoms

Acute STEMI Care - Houston



Name:	12-Lead 1	HR 104bpm	*** ACUTE MI SUSPECTED ***
ID:	111807103602	11/18/2007	10:37:23 AM Abnormal ECG **Unconfirmed**
Patient ID:	PR 0.164s	QRS 0.076s	Sinus tachycardia
Incident ID:	QT/QTc:	0.308s/0.405s	Left atrial enlargement
Age: 63	Sex:	P-QRS-T Axes:	48.8 -52
		IaVR	Septal infarct, possibly acute
			Lateral injury pattern



x1.0 .05-150Hz 25mm/sec
Medtronic, Inc. Comments:

MEDIC 050 HFD HOUSTON FIRE D 3011371-130 LP1212026469

Results

	<u>Group</u>	<u>Group</u>	
	1 (FAST-PCI)	2 (P-PCI)	Significance
Number of Patients	65	43	
Onset to 911 call (min)	54 ± 65 (n=61)	66 ± 97 (n=19)	NS
Onset to Contact (min)	64 ± 62 (n=63)	70 ± 79 (n=36)	NS
Onset to Door (min)	120 ± 63 (n=64)	137 ± 101 (n=40)	NS
Onset to Lytic (min)	101 ± 64 (n=64)	N/A	NS
Onset to Treatment (min)	101 ± 64 (n=64)	243 ± 131 (n=35)	(p<0.0001)
Onset to Reperfusion (min)	165 ± 72 (n=62)	228 ± 129 (n=37)	(p=0.009)
Onset to Balloon (min)	178 ± 68 (n=57)	243 ± 131 (n=35)	(p=0.009)
Door to Balloon (min)	60 ± 31 (n=58)	121 ± 79 (n=37)	(p<0.0001)
TIMI 2-3 on initial angio (%)	80.0% (n=65)	39.5% (n=43)	(p<0.0001)
TIMI Perf. Score ≥ 10 (%)	61.1% (n=54)	18.2% (n=33)	(p<0.0001)
GUSTO Major Bleeding (%)	3.1% (n=65)	0% (n=43)	NS
ICH (%)	0% (n=65)	0% (n=43)	NS
Any Stroke (%)	0% (n=65)	2.3% (n=43)	NS
Re-infarction (%)	1.7% (n=59)	0% (n=39)	NS
30 day Mortality (%)	3.4% (n=59)	5.1% (n=39)	NS

Reducing Time From Symptom Onset To IRA Reperfusion (Ischemic Time) is Critical

